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Exploring Quality Management Strategies to Mitigate Culture Shock Among Cochlear Implant Users

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Walden University
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Abstract

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by

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MASc.EE, University of Sherbrooke, 2000

BS, University of Zaire, 1981

Dissertation Submitted in Partial Fulfillment

of the Requirements for the Degree of

Doctor of Philosophy

Management

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Abstract

After the cochlear implant (CI) activation period and therapy, adult CI users who travel overseas encounter culture shock factors that paralyze their coping capability, which need normalization through management strategies during the post-cochlear-implantation process (PCIP). In the structure of the conceptual framework, a plan is presented for addressing the management strategy. An integrated system of product-process-service-care portrays the product as an active implant within an individual bearer fostering a CI user's physical, physiological, and psychological traits. The problematic aspects alter the end users' coping capability in an unfamiliar host environment abroad. The qualitative research approach used was a single case study with five embedded units. The bounding of the study was to the United States and English-speaking regions of Canada, from which CI users may travel into host countries abroad. Participants are adult PCIP program managers. NVivo tools allow coding managerial opinions before analysis. The study results shed light on ways for innovation managers to (a) prevent inconsistencies producing a loss of quality during culture shock crisis, (b) positively integrate adult CI users for social change by locally or remotely mitigating culture shock factors through social exchange, and (c) manage expectations. The management strategies needed to mitigate culture shock among adult CI users in crisis consists of (a) predicting the quality of the process, (b) executing mitigation strategy drivers, and (c) overcoming both standing disability and environmental factors. Total quality management aims at reducing the cost of quality and thus the PCIP system cost for raising the quality of a positive social exchange of adult CI users in culture shock crisis.

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Dedication

I dedicate this research to my mother, the late *Anastasie-Elisabeth* Bishiya wa Bamane, and father, the late *Desire' Dominique* Ambila Nganayi Mukole, to have made me their dream of reaching a higher level of education and understanding. Their dedication to the better life of disadvantaged individuals and deprived people will, through this work, be a continuing contribution. I also dedicate this research specifically to individuals using assistive technology who struggle to fit in for social interaction and integration. May this study contribute to convivial managed care (CMC).

Acknowledgments

I am thanking The Lord Jesus Christ, My Lord and Savior, for whom I exist and live for God. Thank you, Lord!

I want to thank and express my regards and appreciation to Dr. Bharat S. Thakkar for his mentorship and support in helping to complete this dissertation despite its fluctuating start. Thank you!

I am also thanking Dr. Karla Phlypo for taking over when Dr. Thakkar was on sick leave. Dr. Phlypo Karla was the answer to my prayer for continuing the journey with comfort and assurance. Would you please receive my blessing in Christ Jesus?

My gratitude and thanks go to the members of my dissertation committee, Dr. Nikunja K. Swain and Dr. Kathleen Barclay, Dr. Marguerite Barta, and Dr. Kimberly Anthony, for their valuable inputs and advice to enlighten the dissertation. Thank you very much for your acceptance and assistance.

Finally, through the influence on my PhD research journey, my wife Becky prepared both a BS in business administration and an MS in health communication to get involved in the application of my research. Thank you, and great job! This gift is for my grandchildren Kobe, Tommy, Mariana, Jennice, Nelly, and Keny. Also, for my children Eddy, Gigi, Cedric, Michelle, Alex, Maurice, and the last, Desiree, 11 years after Maurice. Her coming was my stimulus package for the PhD research while babysitting.

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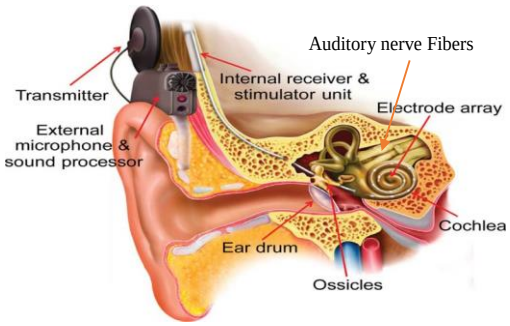
Chapter 1: Introduction to the Study

Deep et al. (2019) defined a cochlear implant (CI) as a surgically implanted electronic device that provides a sense of sound. An implant can deliver sound to a person with profound hearing loss (pHL) or a person who is hard of hearing with severe hearing loss (sHL). The device partially restores hearing by bypassing the normal hearing mechanism in the inner ear (Ng et al., 2016). Electrical stimulation of the auditory nerve through the cochlea acts on fibers (Figure 1) that survived the loss of hair cells, the mechano-receptors of sound. The fibers then fire and propagate neural impulses to the brain, which interprets them as sounds (Zeng et al., 2015).

Figure 1

Conventional Cochlear Implant



Note. From "A Fully Implantable Cochlear Implant SoC With Piezoelectric Middle-Ear Sensor and Arbitrary Waveform Neural Stimulation," by M. Yip, R. Jin, H. H. Nakajima, K. M. Stankovic, and A. P. Chandrakasan, 2015, *IEEE Journal of Solid-State Circuits*, *50*(1), p. 214-229 (https://doi.org/10.1109/JSSC.2014.2355822). Copyright 2014 by IEEE. Reprinted with permission.

Between 1984 and 2014, more than 300,000 adults developed deafness after acquiring speech (Entwisle et al., 2018). Worldwide, adults with hearing impairment who lost their hearing to become postlingually deaf use electrical stimulation of the auditory nerve to benefit from speech perception techniques (McRackan et al., 2019). Additionally, children who were born with hearing loss or experienced hearing loss before they began to speak (i.e., prelingually deaf children) may use the same stimulation as adults. The stimulation conveys the development of speech expression or talking. Zeng et al. (2015) found that in the United States, from 2005 to 2014, about 60,000 adults and 30,000 children were recipients of CIs.

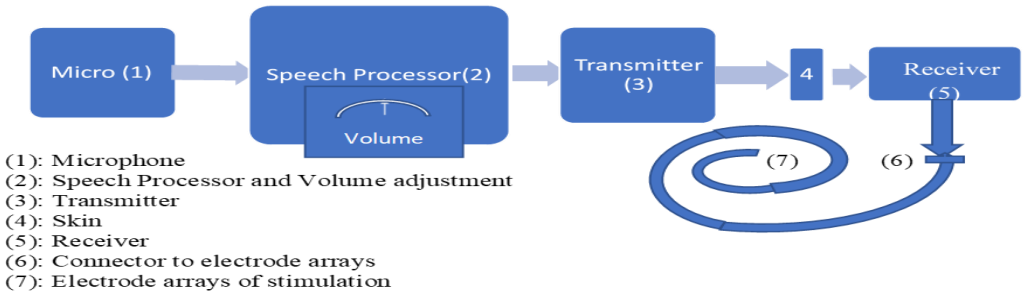
The problem addressed in this doctoral study was the need to explore culture shock management (CSM) strategies among adult CI users in a host environment abroad (Presbitero, 2016). Goldstein and Keller (2015) determined that the host environment abroad holds only the least of the culture shock factors that influence the communication potential of the hosted individual. The hosted individual has maximum challenges. The post-cochlear-implantation process (PCIP) carries on health-related care after surgery. The care conveys the implant technology among therapeutic solutions for hearing and speech expressions (Chen et al., 2019). The period that follows both surgery and device implantation is the post-cochlear-implantation phase.

Regarding children, motherhood inspiration program was designed to portray all caregivers' professional identity in their scientific function for social change (Mauldin, 2014). The effort commonly provided by caregivers relies on the CI user's service plan

and process management. The device is a prosthesis called a CI, as shown in Figure 1 and Figure 2.

Figure 2

Block Diagram of a Conventional Cochlear Implant and Features



Note. Based on data from Yip et al. (2015)

All the CI devices were commonly comprised of (a) a microphone that picked up sound, (b) a signal processor that converted the sound into electrical signals, and (c) a transmission system that transmitted the electrical signals to the implanted electrode or an electrode array (Moteki et al., 2019). Finally, the surgeon or otolaryngologist inserted the electrodes or an electrode array into the cochlea during the perioperative phase, called *cochlear implant biomedicalization* (Mauldin, 2014).

The research topic was the underinvestigated issue of culture shock among CI users, which affects approximately 120,000 to 190,000 people worldwide (Peixoto et al., 2014). A CI contributes to a partial solution to hearing loss and speech impairment. Mauldin (2014) emphasized the redefinition of deafness from sensory or hearing loss to a neurological or a processing problem. Thus, health care management toward service care

was engaged and became certified (Percy-Smith et al., 2018). The redefinition of deafness framed the relationship between deafness and the brain.

Speech delivery relies on the thriving capability of physiological "self-wiring." Mauldin (2014) recalled Hebb's law stipulating self-wiring with the phrase "neurons that fire together wire together" (p. 139. In addition, Finke et al. (2016) reported that a CI serves as a port of access to the neuronal brain's structures, which are characterized by neuroplasticity. The brain's neuroplasticity enables responses to stimulation, which shape the hearing area of the brain by forming a new neuronal configuration.

Background of the Study

The topic addressed in this study was the underresearched area of culture shock among CI users. Mauldin stated that the innovation of service care intake for upgrade replaced the health management step since the redefinition of deafness changed from sensory or hearing loss to a neurological or processing problem (Chen et al., 2019). Finke et al. (2016) reported that a CI is a port of access to the neuronal brain's structures, which are characterized by neuroplasticity. Neuroplasticity enables the brain to respond to biomedically engineered stimuli by shaping the brain's hearing area following therapeutic process absorption (Mauldin, 2014).

The target of interest in this study was the PCIP of CI users in a host environment abroad. Throughout investigations and managerial team members' sights, culture shock factors were among the threats to PCIP (Fitzpatrick, 2017; Lai et al., 2020). The aim was to assess the quality of the outcome and managerial lifecycle of product and the process-service of care (Klebanov et al., 2018). The reflection portrayed CI or implantation

process-service reliability during the turbulence defined by culture shock dynamics. The dynamic characteristics appearing during a new social and environmental familiarization of the deaf CI users' experience deterred positive social aspects that compromised the cochlear implantation process objective (Goldstein & Keller, 2015; Presbitero, 2016). The general systems theory (GST) inspired me to establish a qualitative study that includes a system of systems (SoS), which comprises a stretching view of managing a cochlear implantation process as a system (Bertalanffy, 1975). The target or phase of turbulence described the post-cochlear-implantation process system (PCIPS), a subcomponent of the cochlear implantation process system (CIPS) (Arabi et al., 2018).

CI users and care providers have expressed concerns about consistent management in existing CI service provision. Ng et al. (2016) systematically studied potential strategies of the therapeutic phase after CI activation. I labeled this phase as the PCIP for this study. Arndt et al. (2016) established the analysis of target system-based design of quality control strategies applied to global productions. Consequently, my research endeavor for implementing strategies conveys to analyze my target, which consists of explored CI users' claim or voice of customer (VOC) at managerial office.

The claim of the VOC was for more involvement of caregivers and parents and CI users in decision-making participation instead of managers and medical practitioners alone. I then referred to the body-brain-culture exchange mechanism (Mauldin, 2014). Mauldin (2014) reported that the mechanism mentioned above occurs with and through the cochlear implantation process. Ng et al. (2016) presented the option for implementing integrated local community services with long-term related sustainability and

management for transparency in decision-making participation. Mauldin advanced that the cultural structure of disability, ability, and perception takes place within families.

The mother of a child then becomes a synapse-builder. Volgger et al. (2015) stated that the complexity of the cultural environment presents some challenges to the geographical mobility of individuals in need of a service-care intervention, such as CI users. Goldstein and Keller (2015) defined the U.S. student lay's theories of culture shock. The above theoretical approaches of Goldstein and Keller describe the fundamental beliefs and expectations about the intercultural adjustment that CI users or normal-hearing individuals bring into a host environment abroad. The adjustment mentioned above is a process that is highly dependent on individual difference variables of interest or preferences.

Fitzpatrick (2017) found that transition shock is a state of loss and disorientation predicated by a change in one's familiar environment that requires adjustment. Volgger et al. (2015) presented a case study based on Luhmann's system theory to explore regional health development settings. The intention was to search for governing instruments appropriate for managing health coverage and migration (Keating & Katina, 2019). Finally, Kaivo-Oja (2017) presented the "participatory foresight research" relationship to the "methodological machinery" of qualitative research. Thus, applying qualitative research matches the involvement of PCIPS managers as participants because, technically, the CI is a machine. Kaivo-Oja argued that using qualitative methods can help in understanding the future of technological development and social change.

Management competence can enable firms to match technology with demand (Pomirleanu et al., 2016). In this sense, social issues, and social patterns are highly relevant for future-oriented technology analysis (FTA) and research. I found that management competence combined with the FTA and the Stage-Gate process (S-G P) fostered an advanced approach to management innovation. Lager (2016) introduced the S-G P as a conceptual and operational map to launch beyond managing a new product development process. That might refer to a CI device and the implantation processes throughout speech perception and production therapy (Boisvert et al., 2020; Percy-Smith et al., 2018).

Lager (2016) planned to improve the effectiveness of service value and the efficiency of a product by presenting and supporting significant positive relationship between innovation and operation management options. The relationship described above revealed ways to improve outcomes and process and innovate (Block, 2018). Technology road mapping involves translating company business strategies into innovation objectives, thus creating a framework for further developing innovation strategies (Estrada & Romero, 2016). From FTA to the S-G P, I concluded that a holistic approach is suitable for a better solution. Estrada and Romero (2016) presented the ontology of the system quality attributes for product-service systems (PSS) as a functional measurement based on a holistic approach (Ramage & Shipp, 2020).

Keating and Katina (2019) suggested the need to architect a SoS comprised of possibly heterogeneous systems. The suggestion was that every product or service is a system. A service then forms several independent sets of processes in which each group

represents a system. The above description qualifies the cochlear implantation process as a system. This study emphasized the PCIPS in which culture shock occurs in a host environment abroad (Presbitero, 2016).

Problem Statement

Fitzpatrick (2017) stated that the influence of culture shock focuses on the outcomes of speech perception. Speech perception or hearing ability correlates with the coping capability of CI users. Liu et al. (2016) noted that factors influencing the speech perception capability of CI users go beyond hearing and communication capacity. The factors' variability requires management disrupture for innovation (Blok, 2018). LaRay (1976) reported that the effects of culture shock alter both psychological and social-cultural attributes of individuals involved in communication (see Table 1).

Table 1

Culture Shock Factors and Analytical Dimension

Sudden new culture	Activation of physiological reaction Initiation of emotion	
Physical body unrest	Tension level rises Physical and mental readiness	
Physiological status	Stimuli to brain cortex	Of an alteration in the environment.
	Brain orders triggers of	Adrenalins/non-adrenaline into plasma General muscle tone rises Pupils of the eyes dilate Sense organs awareness toward stimuli Hands sweat.
	Prolonged tension level!	Fatigue
Psychological status or culture shock symptoms		Feelings of anxiety Body becomes ill Withdrawal or isolation Hostile and aggressive attitude

A longing for home or nostalgia
Aberrant concern over minor things,
Compulsive actions
Poor memory
Anger, stressfulness, and frustrations

Note. Based on data from LaRay (1976)

Saylag (2014) reported that among the 66% of men and 34% of women participants of an English for foreign learners (EFL) program who suffered from culture shock, participants reported (a) experiencing anxiety in adapting to a new culture (73%), (b) feeling nostalgia for the home culture (86%), (c) feeling a desire to abandon and escape (73%), (d) experiencing role or identity confusion in the new culture (64%), (e) having identity confusion in the new environment (62%), and (f) experiencing incapacity to cope with the new culture (78%; see Table 2 & Figure 3).

Table 2

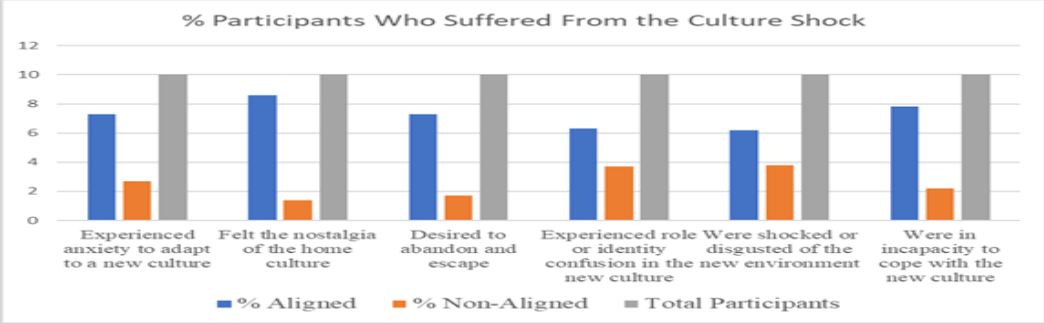
Percentages of Men and Women Participants of English as Foreign Language Program Who Suffered From Culture Shock

Psychological and social-cultural attributes	Men	Women
Experienced anxiety	48.18	24.82
Felt nostalgia	56.76	29.24
Desired to abandon	48.18	24.82
Identity confusion in the new culture	41.58	21.42
Identity confusion in the new environment	40.92	21.08
Incapacity to cope	51.48	26.52

Note. Data from Saylag (2014).

Figure 3

Participant Victims of Culture Shock

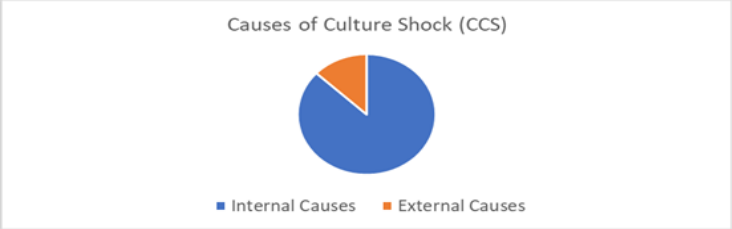


Note. Data from Saylag (2014).

Goldstein and Keller (2015) found that 79.2% of Americans who traveled outside of the United States had culture shock issues as a prime concern. The Causes of Culture Shock Scale (CCSS) addresses internal and external components of culture shock. The external causes show 13% of the environmental factors. The internal causes significantly depict 87% of aspects of the behavioral origin (see Figure 4).

Figure 4

Causes of Participants' Lay Theories of Culture Shock



Note. Based on data from Goldstein and Keller (2015).

The general problem was the incapacity of CI users to cope with the influence of the culture shock factors on their communication potential (Goldstein & Keller, 2015; Presbitero, 2016). The specific problem was that the existing CSM strategies were

ineffective among CI users in a host environment abroad. Goldstein & Keller's study exposed that in the hosted individual viewpoint, the potential source of culture shock factors is in the host environment. The factors also applied to CI users from the United States and English-speaking Canada in their journey abroad (Fitzpatrick, 2017).

Purpose of the Study

The purpose of this single case study with multiple units was to explore CSM strategies needed among adult CI users in a host environment abroad. Managers and professional medical practitioners overseeing the PCIPS constituted the population from which I obtained participants. Feigenbaum (1961), Deming (1982), and Juran (1988) advanced that the responsibility of the manager is to measure the quality of a product or process. According to Fitzpatrick (2017), management strategies could also involve mitigating the derivative factors such as transition shock factors of the state of loss and disorientation predicated by a change in one's familiar environment that requires adjustment (Presbitero, 2016). Thus, the management strategies comprised detailed prerequisites that incorporated quality as the critical element feature. Liu et al. (2016) expressed that consistency in managing the systemic quality of the process was instrumental. The quality of the process would lead to reliable interaction of CI users in the host environment to which the single case study with embedded units was bounded (Gustafsson, 2017; Yin 2018).

Research Questions

The overarching research question was the following: What culture shock management strategies were needed among adult CI users in a host environment abroad?

The dislocation of the CI users in a new cultural environment abroad carried on interactional circumstances. The communication irregularity required normalization through management strategies. On the one hand, there were theoretically two factors: internal causes fostering poor stress management, identity confusion, and prejudice, and external causes bearing differences in language, communication, and surroundings. Further, throughout the cross-cultural interaction, people swiftly discovered that they were themselves in a much broader framework that could lead to an anxiety-oriented change in how they observed themselves and their self-identity. On the other hand, the cross-cultural contact as per the cognitive aspect of culture shock could present a double fundamental issue for CI users in a host environment abroad. The PCIP was a learning phase. Adding cultural learning presented an overload in the process. The social identity of the deaf and hard of hearing who became CI users could carry on (a) marginalization, (b) less self-esteem, (c) isolation, (d) discrimination, (e) irritability, (f) anxiety, and (g) distressed personality issues that require adequate management and consistent quality of care.

Conceptual Framework

The CSM strategies were instrumental in the emotional care of the CI users in a host environment abroad (Lombard, 2014). The social familiarizing process could foster the quality requirements that drove the management of the medical devices and patients in an integrated configuration (Food and Drug Administration [FDA], 2011-2014). The best results might portray a systemic structure following GST. GST would apply to the combination of product-service systems and system quality attributes (PSS-SQA) or SoS

(Estrada & Romero, 2016). The PCIP described the unique optimizing phase of operation for the end users.

Fitzpatrick (2017) found that hosted individuals or end users faced the culture shock that drove transition shock factors. The culture shock carried on communication influences that conveyed the threats in the CI users' behavior and environment. Goldstein and Keller (2015) initiated the college students' lay theories of culture shock. The captured students' views expressed that an individual self-evaluation in the host cultural environment represented only external causes as sources of culture shock. External causes were interactional or environmental.

The culture shock indicators pointed out internal causes, which were individual personality and experience. Referring to culture shock, I intended to find the fundamental causes of culture shock regarding CI users, thus referring to the quantified outcome categories of the learners' lay theories of culture shock. Because the PCIP consisted of a learning process, the customized version would describe the implicit CI users' lay theories of culture shock. As viewed through the managerial and supervisory lenses, any individual was presumed to experience internal and external causes of the culture shock that form the fundamentals (Goldstein & Keller, 2015). I planned to use both causes for assessment, analysis, and quality management modeling strategies to mitigate culture shock factors among CI users in a host environment abroad. The emphasis would be on the internal causes instead, given the cochlear prosthesis operating within the body.

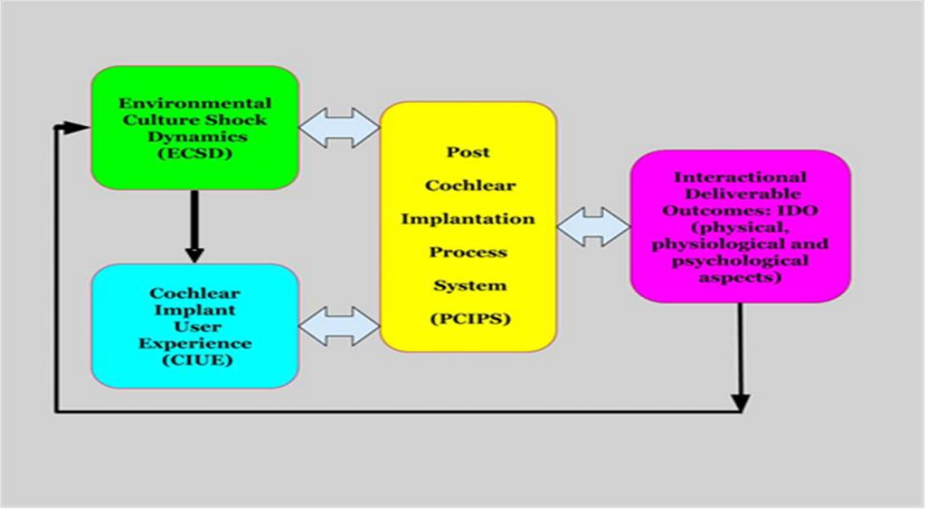
Cultural differences and coping capability depicted the dynamics of CI users. The diagnosis of the hearing loss level defined a new phase of treatment, CI

biomedicalization, which preceded the PCIP (FDA, 2011-2014). Estrada and Romero (2016) proposed to assess a process as a manageable whole for the reliable quality of an integrated product-process-service (I-PPS) unit (Arabi et al., 2018). The manageability of the process of post-cochlear implantation system embraced (a) evaluating the PCIPs using GST to apply a holistic view of the process, following Bertalanffy (1975); (b) using the total quality management as per Deming (1982); and (c) using the total cost of care concepts for cost estimation, referring to HealthPartners (2014-2017).

The above vital steps influence the CSM strategies needed among CI users in a host environment abroad. The diagram of the conceptual framework shown in Figure 5 describes the system's operability. The description illustrates the interaction of the CI users under culture shock in a host cultural environment abroad—the potentials of the systemic process intended to deliver physical, physiological, and psychological interactional outcomes.

Figure 5

Conceptual Framework



Note. Based partially on Goldstein and Keller (2015).

Nature of the Study

I used the case study research approach for this exploration. The study population included five units or groups of CI users' managers and professional medical practitioners overseeing the PCIP. The populations were all located in each of the five selected units, two in the United States and three in English-speaking Canada. All implicated organizations or teams were considered confidential. The organization gatekeepers' data collection permission was first validated and authorized by the formal approvals of the Institutional Review Board (IRB) at Walden University.

The single case study includes five embedded units as a whole, not separate research entities (Gustafsson, 2017). Goldstein and Keller indicated that in their students' lay theories of culture shock, the qualitative research method and analysis lacked a strategic result and adequate interpretation. The design could offer information-rich data about an account of culture shock for CI users coping with a different culture as per the manager's and professional medical practitioners' viewpoints (Shakman et al., 2017). The coping capability data necessitated understanding the lived experience meaning of CI users through managerial or supervisory positions.

The aim was to explore the quality management strategies needed among CI users in a host environment abroad for a culture-shock-free PCIPS (Sousa et al., 2018). The valid phase of the investigation consisted of PCIP since the user, device, and processes defined a SoS that interacted with the environment as an open system (Estrada & Romero, 2016). I applied a holistic case study with multiple embedded units of analysis

in the same context of the symptom. The symptoms described the coping ability and circumstances of the end-users in a host environment. The units defined different locations bound to a single case study.

Through the case study and analysis, I intended to explore the CSM strategies needed among CI users in a host environment abroad. Also, for determining the quality management aspects addressing the PCIP (Kaivo-Oja, 2017). Estrada and Romero (2016) recalled the case analysis of cross-discipline that would inspire the combined implant-process quality lifecycle topics. Through NVivo software utilities, I generated categories of themes and capitalized on trends referring to internal and external causes of culture shock for interpretation and triangulation for analysis (Jackson & Bazeley, 2019).

Definitions

Allostasis: A kinetic process to regain a stable system condition or homeostasis (Shinde & Kurhekar, 2018).

Cochlear implant (CI): An implanted device for intracochlear stimulation (Deep et al., 2019).

Cochlear implantation (CIn): Surgical operation and tests (Boisvert et al., 2020).

Cochlear implant users: Participants in post-implantation who use oral communication for speech recognition and intelligent speech (Boisvert et al., 2020).

Cochlear implantation process: Usually involves medical, audiological, speech and language, education, and other support service professionals for the management of severe-to-profound sensorineural hearing loss (Boisvert et al., 2020).

Cochlear implant biomedicalization: A process that includes both pre- and perioperative activities (Boisvert et al., 2020).

Cochlear implantation process system (CIPS): A heuristic process that usually involves medical, audiological, speech and language, education, and other support services provided by medical professionals for the management of severe-to-profound sensorineural hearing loss (Bertalanffy, 1975; Boisvert et al. 2020; Deep, 2019; Ramage & Shipp, 2020; Sladen et al., 2018).

Dislocated: An individual located away from the home cultural environment (Fitzpatrick, 2017; LaRay, 1976; Oberg, 1960).

Environment (host): Consists of a new environment in which newcomers wish to retain their original identity and resist identification through a separation strategy (Fitzpatrick, 2017).

Identity (cultural): Relates to culture and all of its components, such as language, cues, traditions, and familiarities of a person's self-conception and self-perception related to nationality or ethnicity (Lombard, 2014).

Intra- and interindividual variability: Internal and external changes signified by inside and outside environments of an individual (Saillot, 2015).

Intraindividual change: Endured horizontal change construed in an individual as a developmental process (Saillot, 2015).

Intraindividual variability: A relatively short-term change that is construed as reversible and occurs rapidly (Saillot, 2015).

Individuals' lay theories of culture shock: CI users' lay theories of culture shock, which tend to attribute culture shock to differences in the external environment such as language, communication, and surroundings, rather than to internal affective or cognitive factors, such as poor stress management, identity confusion, or prejudice (Goldstein & Keller, 2015).

Memory-burden-related anxiety: Subjective memory complaints reflecting worries about one's memory performance, making it an expression of anxiety (Lombard, 2014).

Neuroplasticity: The brain's ability to reorganize itself by forming new neural connections throughout life (Mauldin, 2014).

Post-cochlear implantation process (PCIP): Dynamic characteristics of implantation after surgery and activation (Deep et al., 2019).

Post-cochlear implantation process system (PCIPS): A post-cochlear implantation systemic process (Bertalanffy, 1975; Deep et al., 2019; Sladen et al., 2018).

Quality indicators (QIs): Pointers that indicate potential problem areas that need care provider review, investigation, and improvement (Sciacovelli et al., 2017).

Quality management systems (QMS): Compliance with ISO9001, AS9100, ISO13485, and FDA Title CFR Part 820 (FDA, 2011-2014).

Quality of life (QOL): The standard of health, comfort, and happiness experienced by an individual or group as needed in life (Liu et al., 2016).

Scientific motherhood: Involves the belief that women require expert scientific and medical advice to raise their children healthfully (Mauldin, 2014).

Social stressors: Result from relationships with others and a person's social environment. The exacerbation of social stress often occurs when people have less capability to change their circumstances (Kietzman & Gourley, 2020).

Therapeutic biosignature: A neuronal configuration response to a therapy (Mauldin, 2014)

Assumptions

Tomaszewski et al. (2020) stated that assumptions are hidden perspectives that the researcher must assume to be true, or otherwise, the study could not continue. Thus, in this study, I made the following assumptions regarding the CI: U.S. medical device manufacturers complied with Article 2 and Article 3 of Medical Device Directive (MDD) 93/42/EEC. In addition, Article 2 of MDD 93/42/EEC regulated how to place medical devices into the market and put them into service, and people properly followed implementation instructions.

I also assumed that referring to Wilson et al.'s (2017) findings, expectations, confidentiality, and ethical responsibilities encouraged participants' openness in communication.

I assumed that all managers and professional medical practitioners supervising the PCIP were knowledgeable and applied the FDA requirements for deaf children and adult end-users (FDA, 2011-2014). In addition, the motherhood program guarantees a legitimate and consistent long-term therapy with follow-up to protect and drive a new generation of children end-users and technological integration success (Mauldin, 2014). Another assumption was that the population sample of managers and supervisors was

appropriate to explore themes involving management strategies needed among CI users to enable their coping capability in the host environment abroad.

Investigations had demonstrated that culture shock affected dislocated individuals in general (Fitzpatrick, 2017; Lombard, 2014). I presumed that culture shock could affect CI users more in different ways or venues (FDA, 2011-2014). Finally, I also assumed that positive attitude and motivation of CI users were the drivers of neuronal *self-wiring* and dendrite or neuronal circuit formation (Mauldin, 2014). The managers and team members were biased in their care-providing skills because of therapy overload, thus relegating culture shock issues to the self-appreciation of the CI users (LaRay, 1976; Oberg, 1960; Presbitero, 2016).

Scope and Delimitations

I did not cover the detailed foundations of psychology, behavioral medicine, sociology, or other related areas of expertise in biology, medicine, and the public health domain. I omitted, for instance, the mechanism of signs and symbols of social interaction that relies on psychological study. The multidisciplinary aspect of the study conveyed only the tools from the disciplines indicated above to serve in the management of goods and people or patients such as deaf and hard of hearing and CI users. I did not execute intramural investigation in this study. Only managers and professional medical practitioners were participants.

The patients were qualified as recipients of a CI and became users after the phase of biomedicalization. The CI biomedicalization phase went from preoperative to postoperative, preceding the step of activation. My phase of interest was the PCIP after

the activation of the CI. The maturity of the therapy performed in the above sequence was certain. The CI users became dislocated in a host environment and were confronted with culture shock factors.

Lombard (2014) stressed that the loss of familiar signs and symbols of social interaction resulted in anxiety. Mauldin argued that social interaction or social identity background fostered customs, cues, norms, and unpredictability of individual outcomes. The outcome above requires novel behavioral and strategic exploration to contribute, as an alternative for an optimal solution, to mitigating culture shock among dislocated CI users. The transferability describes the complement of the study for the future. Advancement in the technology that may influence CI systems presents the necessity of the quality of social interaction in the host environment and may foster algorithm upgrade for real-time remote assistance.

Limitations

The study's potential design and methodological weaknesses concerned the process of biomedicalization of acoustic hearing aid (AHA) and CI over deafness. The mentioned devices were therapeutically limited. When used, the devices did not cure or restore hearing loss. Hearing loss or deafness is considered a disability in hearing culture, as opposed to deaf culture in the deaf community (Lock & Nguyen, 2018). My mindset was that of a vulnerable human susceptible to emotional tasks in the line of duty that might influence the final decision and the results. The case study strategy with qualitative research approaches depends on the researcher's integrity with susceptibility to falling or corruption.

I also address the weaknesses underlined the mindset of a researcher's role that should be solution-oriented instead of therapeutically involved, which may attach emotion to the task. The case study strategy with qualitative research approaches depends on the researcher's professionalism, integrity, and positive attitude to avoid biases. In theory in action, Clark and Ivankova (2016) reported that what people do is different from what they say they do. Therefore, observational data collection should accompany the qualitative approach of inquiry through an online interview. Video or Skype responses may be trustworthy, but I used an open-ended online survey through SurveyMonkey and transferred all inputs into NVivo for pattern coding.

Bazeley and Jackson (2019) stated that NVivo assisted in managing collected data. However, NVivo did not eliminate biases that I still have mastering responsibility through an open process in qualitative research. Clark and Ivankova (2016) recommended potentially addressing threats to research quality by engaging in tests and validating the authenticity and relevance of inductive content analysis. The examination of all deviations, such as cases or data, might disqualify the developed categories. I distinctively used the term *verification* as a suitable term for a qualitative methodological approach for research. Nowell et al. (2017) claimed that in qualitative research, words such as *credibility, trustworthiness, and authenticity* are used instead of *reliability and validity,* as in quantitative research**.**

Significance of the Study

The significance of the study involves the importance of practice and theory. The importance of preparation contributed to preventing the causes of social, individual, and

environmental changes that deterred the coping capability of CI users in a host environment. The significance of theory drove the cochlear implantation process philosophically in the context of GST (Rousseau et al., 2018). I conveniently applied GST to the SoS configuration presented in the study. The aim was to find disruptive solutions to predict the influence of culture shock factors for a positive interactional social change. Arabi et al. (2018) reported that an integrated system aims to withstand disturbance. Culture shock described disruption to the PCIPS in CI users in a host environment abroad. The system mentioned above described a product-service system (PSS) aimed at a function-oriented business model (Masior et al., 2020).

I might dedicate the business to the quality of care and social change for the end users (Pomirleanu et al., 2016). The extended producer responsibility (EPR) into the PCIP would improve environmental performance by abiding by the market customization and CI life cycle (Barringer, 1998). The customized uniqueness might concern the fragile and emotional communication capability of the CI users undergoing culture shock (Lai et al., 2020). The research objective to satisfy the concern and close the gap was a driving force for exploring the CSM strategies among CI users in a host environment abroad. The aim is to correct the apparent disadvantage of the dynamic cultural issues during the PCIP. The necessity of management strategies in a host environment abroad implies using remote assistance features (Khairat et al., 2019).

Significance to Practice

Based on the integrated service concept by Arabi et al. (2018), the CI users carried a sustainable integrated product-service system (S-PSS) in the stage of the PCIP.

The process system required a reliable servicing operation (Mauldin, 2014). During displacement abroad, the cultural environment changed and induced culture shock that influenced the end users' outer and nonidentified inner parts (Kietzman & Gourley, 2020). The exact change caused social and environmental issues and deterred the coping capability of individuals. A disruptive solution to the inability of CI users to predict the influence of culture shock factors in their communication potential relied on the applied concepts and theories. The problem, purpose, and background layouts fostered essential keywords for exploring the CSM strategies among CI users in a host environment abroad. Management strategies also involved mitigating the derivative factors such as transition shock traits of the state of loss and disorientation grounded in a change in the familiar environment that required adjustment (Fitzpatrick, 2017).

Significance to Theory

The exploration strategies relied on a theoretical foundation construed throughout the underlying theories and concepts in the study. The foundation drives the CIPS through the following underlying concepts and approaches: (a) the management of the service delivery, (b) culture shock theories, (c) modeling, and control of the sustainable and integrated product-service system (S-PSS), (d) technical and managerial field for improving product quality, (e) GST, (f) product-service system (PSS) across life cycle, (g) Luhmann's system theory (LST) for quality management of health and migration, (h) and total cost of care (TCOC). The management strategies includes detailed fundamentals that incorporate quality as a vital component. Reliable management of the holistic quality of the process is essential because it is instrumental to reliable interaction of CI users in

the host environment abroad (Liu et al., 2016). The CSM strategies needed among CI users in a host environment abroad would rely primarily on 87% of internal causes. External causes are secondary (Goldstein & Keller, 2015).

Significance to Social Change

The CI users constituted an organismic system with complex, dysfunctional hearing status operating in a turbulent environment of culture shock. The total quality management strategy (TQMS) carries on a plan for (a) systemic social-emotional adequacy, (b) social integration and professional insertion, and (c) global impact under international standards (Garrison et al., 2017). The reliable social interaction aligns with the FDA communication standards for positive social change (FDA, 2011-2014). Physical and virtual supports of the PCIPS and the dynamic promotion of biological and biomedical engineering contribute to the quality of care (QoC). The quality of care envisions impacting human development through an international sustainability effort for global positive social change initiative. The plan and execution endeavor will be conveyed through international philanthropy, charity, and CI manufacturers. The social enterprise (SE) would function like a biosocial enterprise. The enterprise will assist CI users in a culture shock crisis in a host environment abroad (Cornelissen et al., 2021).

Summary and Transition

The research explored CSM strategies needed among CI users in a host environment abroad from the problem statement perspectives. The text identified CI users as the end-users. The investigation includes identifying and evaluating the quality management tools among managers and professional medical practitioners overseeing the

PCIP to mitigate culture shock as a threat to the cochlear implantation system. The culture shock factors describes the deviating process characteristics that systemically affect the interactional outcomes deliverable out of the end-users into a host environment abroad, as illustrated in Figure 3. I planned to assess the PCIPS vector-drivers, which referred to GST. The end-users were typically unable to anticipate the culture shock dynamics in a host environment.

The normal hearing framework presented the culture shock as the dynamic of how individuals deal with life changes in a host cultural environment. The host environment abroad fosters interactive stresses (Kietzman & Gourley, 2020). The dimensions of the end-user's cultural challenges or culture shock factors still were unknown regardless of rising disparity and typical differences in cultural difficulties in individuals. There was no predictive model to prepare the CI users (Oberg, 1960). Understanding the interoperability of the elements of the conceptual framework is necessary. The culture shock factors that end-users endured and experienced abroad influence the PCIPS, thus affecting their social status constructs as well.

The underlying concepts in the study constituted a platform that embraces the following base: (a) the management of the CI service delivery aimed to improve an integrated product-service based on the GST, (b) modeling of the management fostering managerial techniques aspects related to the technology of the CI, and (c) PCIPS. The system theory for quality management presented a strategy for quality assessment and improvement of the system. Thus, expanding to the management of health and migration aimed to mitigate culture shock among CI users who migrate to a host environment

abroad. A useful predictive model would require considering management strategies of the culture shock among CI users in a host environment. In Chapter 2, I present a review of the literature that supports the investigation through the case study.

Chapter 2: Literature Review

Sources of culture shock contain internal and external elements. External sources revealed 13% acquired directly from a host environment abroad. In addition, internal causes, evaluated at 87%, concern individual personality formation or individuation. The service-care intervention may alter the CI users' culture shock experience following the above-mentioned findings (Goldstein & Keller, 2015). Therefore, I first present the implant and CI users, and the culture shock theories.

Second, the strategies adopted for the management of culture shock relied on GST concerning the following aspects: (a) psychosocial aspects, (b) ethics and morality, (c) quality, (d) FDA and regulations, (e) cost, (f) service-care, and (g) mean for service-care delivery or a CI servicing organization (CISORG; Cornelissen et al., 2021). Third, the CI presentation aims to expose the device's interaction at the internal interface organism-device as a closed system and externally as an open system through the microphone and the environment.

Literature Search Strategy

I completed a literature review by collecting materials from the Walden University library, using the Science Direct (Elsevier) database to locate sources in peer-reviewed journals. Walden University provided a Google Scholar link for journal access. Elsevier periodically delivered specific updates as per my request concerning journals about cochlear implantation processes. The Walden University library provided the required materials or purchased them from vendors based on the quota assigned to the doctoral students. I identified systematic reviews in the databases at the Wiley Online

Library, Routledge Taylor and Francis Group, International Conference proceedings and Symposium, U.S. Department of Defense, Research Gate, oto.sagepub.com, Springeropen.com (eBook), Walden Dissertations, and sthvsagepub.com.

I consulted books on quality assessment, healthpartners.com, the Ear Foundation, Better Hearing for All, and Alexander Bell Cochlear Implant University. Through Walden University, I downloaded materials from emeraldinsight.com, Government journals on CI published by the Food and Drug Administration (FDA), the National Institute of Health (NIH), and the University of Oxford advanced access publication deaf studies. I subscribed to *The New England Journal of Medicine Otolaryngology* and borrowed from the local public library and university archives such as those of the Sloan School of Management at the Massachusetts Institute of Technology (MIT), Bentley University School of Management, Harvard University Business School, Health Science and Technology (HST; MIT-Harvard joint project), Boston University School of Medicine, and Ravi Zacharias International Ministries (RZIM) apologetics science, the meaning of life.

I used search terms corresponding to the topic, primarily *CI technology*, *cochlear implantation process*, and *post-cochlear implantation assessment*, *management*, *safety*, and *market*. While obtaining my master's degree in applied sciences and electrical engineering at the University of Sherbrooke, I attended elective classes in medicine regarding physiology, electro-physiology, and neurophysiology of the cochlea and the inner ear. My experience allowed me to quickly consult sciences direct on hearing loss, development of CI users, CI in otorhinolaryngology (ORL), and post-CI services. As a

future scholar-practitioner attending the School of Management and Technology, I reviewed books about total quality management from Deming at MIT, total quality of care, and total cost of care at HealthPartners.org in Boston. The theories of systems that I was applying to my research allowed a multidisciplinary study.

I prepared and received a certificate of quality medical devices hardware and software regulations at the IEEE program in 2017 in Woburn, MA, to update my skills and expertise to gain proposal approvals and conduct the study. I also consulted CI users' environment and their quality and meaning of life. In addition, I learned about deaf culture and the World Health Organization inquiry in worldwide hearing loss issues as well as culture shock, CSM, and health assessment for culture shock modeling.

Conceptual Framework

CSM strategies are instrumental to the emotional care of CI users in a host environment abroad (Lombard, 2014). The social familiarizing process fosters the quality requirements that drive the management of medical devices and patients in an integrated configuration (FDA, 2011-2014). The best results portray a systemic design following GST applied to combination product-service systems-system quality attributes (PSS-SQA) or SoS (Estrada & Romero, 2016; Masior et al., 2020). The post-cochlear implantation process describes the unique optimal phase of operation for users. The users face the culture shock that drives transition shock factors (Fitzpatrick, 2017).

The culture shock carries on communication aspects that convey the threats to CI users' behavior and environment. Goldstein and Keller initiated college students' lay theories of culture shock. The captured students' views expressed that an individual self-

evaluation in the host cultural environment represents only external causes as sources of culture shock whereas the culture shock indicators in the study point out internal causes that were individual personality and experience dependent (Goldstein and Keller, 2015). External causes were interactional or environmental.

Estrada and Romero (2016) proposed to assess a process as a manageable whole for the reliable quality of an integrated product-process-service unit (Arabi et al., 2018). The manageability of the system of post-cochlear implantation process embraces (a) evaluating the PCIPs using GST to apply a holistic view of the process, following Rousseau et al. (2018); (b) using total quality management as per Deming (1982); and (c) using the total cost of care concepts for cost estimation, referring to Liu et al. (2016). The above steps are potentials for defining the CSM strategies needed among CI users in a host environment abroad (HealthPartners, 2014-2017). The system's operability described in the conceptual framework diagram illustrated the interaction of CI users under culture shock in a host cultural environment abroad. The systemic process potentials aimed to deliver physical, physiological, and psychological interactional outcomes (Lock & Nguyen, 2018).

The affecting aspect of culture shock implies applying coping strategies after appraisal to deal with stressful situations (Presbitero, 2016). However, a CI user's stressful condition may be higher (FDA, 2011-2014). The theory of cultural learning is the foundation of the behavioral aspect of culture shock. Lombard (2014) also reported that the cognitive part of culture shock is grounded in the idea of social identification, where identity is a vital issue for cross-cultural travelers. Throughout cross-cultural

interaction, people swiftly discover that they are themselves in a much broader framework that can lead to an anxiety-oriented change (Lombard, 2014).

The change might be in how they observe themselves and their self-identity. As per the cognitive aspect of culture shock, cross-cultural contact presents a double fundamental issue for CI users in a host environment abroad. First, the PCIP is already a learning phase. The additional cultural learning presents an overload in the process (Blom et al., 2017). Second, the social identification of people who are deaf and hard of hearing who become CI users carry on (a) marginalization, (b) less self-esteem, (c) isolation, (d) discrimination, (e) irritability, (f) anxiety, and (g) distressed personality issues (Murray, & Schaller, 2016).

The PCIP describes the unique optimal phase of operation for the users. The users face culture shock that drives transition shock factors (Fitzpatrick, 2017). Fitzpatrick (2017) found that recent approaches to adjustment concedes two domains and two roles. The domains are work and nonwork, society or work and family life, and social life adjustments. The role fosters work role and family role adjustments.

The successful adjustment factors inherent in the host environment aim to withstand cultural barriers through pre-, pro-, and post-acculturation. The withstanding consists of totally adjusting objectively rather than navigating the culture to challenge the destructive culture shock forces during a short-term journey. On the one hand, the success factors are (a) individual differences, (b) personal qualities, and (c) intercultural communication competence (Presbitero, 2016). On the other hand, social-cultural learning approaches and employer social support are parts of a cultural investment that

alter individual internal values through preparation and training (Wattanacharoensil et al., 2020). The prerequisite acquisition of the learning experiences aimed to training for the external essence of the environment before landing for professional interaction with the host rather than a cheap-in cultural transaction without intention to acculturate (Fitzpatrick, 2017; LaRay, 1976; Saylag, 2014; Oberg, 1960).

The culture shock fosters the interactional outcomes carrying on factors that alter CI users' behavior in the environment, as depicted in Figure 3 in Chapter 1. The college students' lay theories of culture shock described the self-evaluation of an individual in the host cultural environment as representing only the external causes of culture shock factors (Goldstein & Keller, 2015). The investigated culture shock indicators mainly revealed the implications of the internal causes. Referring to culture shock dimensions and concepts, I intend to deduct the fundamental equivalent causes of the culture shock regarding CI users throughout the managerial insights.

The fundamentals embed both external and internal causes for assessment, analysis, and management modeling strategies to minimize culture shock factors. Cultural differences and coping capability depict the dynamics of CI users. The diagnosis of the hearing loss level defines a new phase of treatment, the CI "biomedicalization" that precedes the PCIP (FDA, 2011-2014). Estrada and Romero (2016) proposed system quality attributes (SQA) ontology, an argumentative concept in process of standardization in the topology of the product-service systems (PSS) across the lifecycle.

The vector drivers of the of the above concept in the understanding of the PCIPS functions are the purpose and the conceptual framework of the study (Entwisle et al.,

2018). Garrison et al. (2017) intended the combination of product-service systems and system quality attributes (PSS-SQA) for cutting the additional cost of the product-service systems. The cost was related to a decrease in the uncertainty of predetermined product-service systems functionality that behaves like a SoS. The SoS expectation is reaching higher capabilities and performance unconceivable with a typical system configuration (Keating & Katina, 2019).

Every system composing the SoS reaches authentic goals regardless of separation from the rest of the SoS. As a complex system, the product-service systems portray a compound of heterogeneous elements such as products and processes (Estrada & Romero, 2016). The systemic combination of the CI, cochlear implantation, and PCIPSs depict a SoS configuration. Arabi et al. (2018) promoted the function-oriented model interpreted to underscore the CI manufacturer, users, and continuing processes for better interaction in a host environment abroad. All the above three aspects, essential for positive social change, represent a bundle package product-service system (PSS) that fosters sustainability features (S-PSS) for better business transactions (Sankaran, 2020).

The severe environmental legislation denoting the FDA regulations in the cochlear implantation process present some flexibility (FDA, 2011-2014). The flexibility relegates negotiation room for medical device producers to adapt to the advancement in technology and applications. The culture shock in CI users sojourning a host environment abroad expresses a disturbance or threat to the integrated system (Arabi et al., 2018). The integration described in the product-service system intends to a function-oriented business model dedicated to the quality of care for CI user social change (Marchiori &

Mendes, 2020). The extended producer responsibility (EPR) in the PCIP improves environmental performance by abiding on market customization and the implant life cycle (Mugge et al., 2018). The market uniqueness describes the fragile communication capability of the CI users undergoing culture shock.

The manageability of the process of post-cochlear implantation system embraces: (a) evaluating the PCIPs using GST to apply a holistic view of the process. Bertalanffy (1975) posited that GST could satisfy the model of behavior and properties of any system functionality. The basic model corresponds to a self-organized agent or organism or systemic particles with the ability of self-sustainability. The sustainability implies both maintenance and recovery during the internal and external disturbance; (b) using total quality management as per Deming (1982) recommendation for total quality management (TQM) corresponding to total quality control (TQC) scheme as per Feigenbaum (1961). Feigenbaum stated that total quality control fosters interesting quality cost guidelines of quality engineering with an abridgment of total business management (TBM). The word Control signified management interchangeably.

I selected Feigenbaum guidelines to determine the quality cost and reliability of a service-care value (SCV) as a total quality cost value. The quality determination would be for a term plan in years corresponding to the “net present value” (NPV) duration of the success expectation or process attributes in the PCIPS. The system attributes above translates what the implant does well or the potential outcome of the applied therapy processes to mitigate culture shock factors among CI users in the host environment abroad. The third step allows using the total cost of care concepts for cost estimate

referring to a health index (HealthPartners, 2014-2017). Total cost of care (TCOC) measures consisted of measuring the collection of all costs associated with a patient across several places of service.

Two population-based indices are (a) the total cost of care index (TCI) and (a) the total resource use index (RUI) endorsed by the National Quality Forum (HealthPartners, 2014-17). The above steps are potentials to driving the management strategies of the process quality to mitigate the culture shock among adult CI users. The system's operability described in the conceptual framework diagram illustrates the interaction of the CI users undergoing culture shock in a host cultural environment abroad. The systemic process potentials intend to deliver physical, physiological, and psychological interactional outcomes.

Literature Review

Methodology Review

Through the case study and analysis, I planned to explore the CSM strategies needed among CI users in a host environment abroad. Goldstein and Keller (2015) found that culture shock factors corresponded to internal and external causes. Near 87% of internal causes include all the described internal psychosocial, quality, cost, and service aspects for insertion into the process therapy, defined as the PCIPS. The external causes represent 13% and may be attained directly in a host environment through service-care when intervening for CI users who are confronting culture shock. Therefore, I introduce first the culture shock theories and concepts as researchers in the discipline have approached culture shock in general.

Second, I present the similarities and contrasts inherent in their approaches. The chosen populations of the study manage individuals who use implantable assistive technology for hearing and speech (Deep et al., 2019). The individuals are CI users. Third, I introduce the theoretical aspects of the implant and CI users. The presentation of the CI aims to expose the interaction of the device at the internal interface of organism-device as a closed system on the one hand. On the other hand, externally, as an open system through the microphone and the environment (Zeng, 2015).

Fourth, the management strategies of the culture shock rely on the GST of characterized (a) psychosocial aspects, (b) CI update, population, and environment, (c) CIPS, (d) quality and FDA regulations, (e) cost and service-care, and (f) mean for service-care delivery or a cochlear implant servicing organization (CISORG) (Godinho et al., 2020).

Culture Shock Theories and Concepts Assessment

This study refers to the outcomes of a quantitative investigation by Goldstein and Keller (2015) regarding the U.S. College students' lay theories of culture shock. Goldstein and Keller tested a specific aspect of students' beliefs about intercultural adjustment as lay theories of culture shock. Despite the substantial benefits of study abroad, student sojourners frequently faced significant difficulties (Presbitero, 2016). The problems occurred when transitioning to the host culture, particularly at the voyage's initial stages, often limiting their social and academic success. The targets in the critical investigation were the beliefs and expectations about the intercultural adjustment that students brought to these interventions.

A questionnaire assessed the structure and correlations of a sample of the undergraduate U.S. College students' lay theories of culture shock. The questions were: What was internal and external causes of the lay culture shock among undergraduate students in a host academic environment abroad? What was the tendency to attribute the lay culture shock to internal causes among undergraduate students in a host educational environment abroad? What factors might predict the tendency to attribute the culture shock to external causes among undergraduate students in a host academic environment abroad? The students encountered difficulties commonly referred to as *culture shock*, defined as *the process of initial adjustment to unfamiliar* territory. The term describes the emotional, psychological, behavioral, cognitive, and physiological impact of the adjustment process on an individual.

The method used, given the absence of research on lay theories of culture shock, aimed to identify potential correlations. Hence, relying on predictors of intercultural adjustment, a process highly dependent on the variables such as (a) cultural knowledge-seeking, (b) self-efficacy, openness to experience, (c) ethnocentrism, (d) foreign language interest, and (e) cross-cultural competence. The above-mentioned variables of interest are indicators of individual differences. The indicators describe a customization process based on the lack of culture shock students' lay theories. Goldstein and Kelley (2015) chose the selected parameters mentioned above as predictors of intercultural adjustment.

The participants were U.S. College students in a host academic environment abroad. *The students' lay theories of culture shock* comprise two factors: internal causes fostering poor stress management, identity confusion, prejudice, and external causes

bearing differences in language, communication, and surroundings. The questionnaire instrumentation proceeded through a scale for the measurement of, first, the Causes of Culture Shock Scale (CCSS), aimed to assess participants' perceptions of culture shock in respect to reliability Cronbach's alpha more significant than the minimum requirement of 0.70. Thus, an open-ended item served as both comprehension check of the concept of culture shock and mechanism for priming thoughts about the causes of culture shock. Second, the General Self-Efficacy Scale (GSES) measured coping with a novel or difficult task.

Higher scores indicated greater self-efficacy aimed to play a role in shaping lay theories of culture shock. Third, the IPIP Openness subscale (Personality Item Pool–Five-Factor Model (IPIP-FFM) measured openness to experience. Higher scores indicated greater openness aimed to closely relate to the information seeking, which informed and shaped lay theories of culture shock. Fourth, the Generalized Ethnocentrism Scale (GENE) assessed individual differences in ethnocentrism, regardless of cultural background. Higher scores indicated more significant ethnocentrism, which fostered diminished culture learning expected to influence lay theories of Culture Shock.

Fifth, the Interest in Foreign Languages Scale (IFLS) assessed attitudes about the value of language learning. Again, higher scores indicated more significant interest in foreign language learning relating to cultural learning opportunities to influence lay theories of culture shock. And finally, the Cultural Intelligence Scale (CQS) measured cross-cultural competence with four sub-scales, including (a) Metacognitive CQ—awareness, (b) Cognitive CQ—knowledge, (c) Motivational CQ—attention and energy,

and (d) Behavioral CQ—ability to act. Again, higher scores indicated greater CQ on each subscale requiring cultural learning involved in developing CQ contribution to lay theories of cultural shock.

Lombard (2014) reported that the affective (A), behavioral (B), and cognitive (C) constituents, representing the ABC framework of culture shock, are the groundings of the theories and approaches to culture shock. The affective aspect of culture shock implies applying coping strategies after appraisal to deal with essentially stressful situations. Yet, a CI user's stressful condition may be higher. The theory of cultural learning is the foundation of the behavior aspect of culture shock. Lombard also reported that the social identification theory, in which identity is a vital issue for cross-cultural travelers, is the foundation of the cognitive aspect of culture shock.

Throughout cross-cultural interaction, individuals quickly discover that they are themselves in an extensive societal situation that leads to an anxiety-oriented change. The change may be in how they experience themselves and their self-identity. Fitzpatrick (2017) found that the recent approach to adjustment concedes two areas and two roles. The areas were work and non-work, society, work and family life, and social life adjustments. The role fosters work role and family role adjustments instead.

The reasonable adjustment attributes inherent to the host environment aim to withstand cultural barriers through pre, pro, and post acculturation. And the withstanding envisions for totally adjusting objectively rather than venturing culture and challenge the detrimental culture shock factors during a short-term journey. The competing observation is between the following success factors (a) individual differences and personal qualities,

(b) intercultural competence, and (c) intercultural communication competence. In addition, cultural investments such as social-cultural learning approaches and employer social support alter individual internal values.

The alteration occurs through preparation and training. The external essence is created by acquiring prerequisite learning experiences. The experiences appear before landing for functional interaction with the host rather than cheap-in cultural transactions without intention to acculturate. Oberg (2009), as the pioneer of culture shock theory, stated that the culture as the spoken language or the accepted beliefs embraces the cues. The cues may foster words, gestures, facial expressions, customs, or norms acquired by all individuals in the course of growing up (Goh et al., 2016). The onset of the symptoms carries on behaviors among withdrawal or isolation, hostile and aggressive attitude, poor memory, nostalgia, anger and frustrations, pointless concern, compulsive actions, and stress-induced illness (Kietzman & Gourley, 2020; LaRay, 1976; Oberg, 1960). Kietzman and Gourley (2020) argued that the symptoms could become, over time, the foundation of the built-in physiological conditions. When displaced in a host environment abroad, the individual presumed the marginalization of their sense of being through culture shock factors. As a result, the individual is carried out in a state of abandonment by a careless host. Oberg (1960) posited that the situation may rise against an internal and ungrateful feeling condemning the host's assistance as (a) misplaced, (b) unfit, and (c) full of insensitivity and unsympathetic to the visitor and their worries. Oberg underscored that the lack of alert and sufficient investigations of culture shock presented difficulties for social support or systematic assistance.

The culture shock factor is significant when someone operates in an environment that differs much more from the milieu they grew up in (Fitzpatrick, 2017). The similarity of concepts and theories may exist in the initial adjustment to an unfamiliar environment that requires applying coping strategies after appraisal to deal with essential stressful built-in. The built-in relies on learning a culture that is a vital issue for cross-cultural voyagers. Cultural learning is part of the preparation and training that describes the cultural investment potential for social life and family role adjustment (Lai et al., 2020). The recommendation of prerequisite acquisition of the learning experience before a landing drives the functional interaction that fosters customs, cues, and norms attributes. The attributes mentioned above are the means of language and communication used to confront culture shock (Presbitero, 2016). The above said culture shock produces anxiety when the loss of all familiar signs and symbols of social interaction precipitate.

The contrasts exist in the categories of a participant's interests. In the students' case, the assessment of their beliefs about intercultural adjustment was through a students' lay theories of culture shock. The enthusiasm of going abroad for study, seen as a benefit, was quickly transformed into limited social and academic success. The students' lay theories of culture shock comprised two factors: internal causes and external causes. The participant tended to attribute intercultural adjustment difficulties to socio-environmental, prominent differences in the cultural environment rather than internal (Goldstein & Keller, 2015). On the one hand, the other approaches to culture shock present groundwork of affective, behavioral, and cognitive constituents of the culture shock for curious travelers or adventurers.

The successful adjustment factors weight on acculturation for total adjustment objective. Superficially exploring the cultural transactions without the intention to acculturate was pointless (Fitzpatrick, 2017; Lai, Hu, & Chen 2020). Finally, the victims of culture shock perceive the incurred difficulties as more or less created by the host country's people. The challenge is a significant discomfort that individuals differ significantly in how culture shock affects them even though people reacted to the same frustration. That is why two essentials are mandatory: The element of the social adjustment that is learning the interrelationships of culture forms like technologies, institutions, ideas, and belief systems because a modern nation is a complex society with corresponding variations in culture.

Superimposed upon these differences are the common elements of an official language, institutions, and customs which joins it together to form a nation in one hand. On the other hand, a successful understanding without knowing the language is painful because language is the central symbol system of communication. Frustration and anxiety decrease with the ability to carry on a friendly conversation to gain confidence and a feeling of power. The study concerning culture shock presents a short for carefully organizing social assistance. The responsibility is relegated to the victim's capability to self-adjust to the new situation over time (Oberg, 1960).

Evaluation of Culture Shock External and Internal Perspectives

The external affective aspect of the theories and approaches to culture shock concern dealing with essentially stressful situations that represent only 13% overall.

Fitzpatrick promoted social integration to alter professionals internally. The endeavor looks as influenced by the social, economic, and political relations. In this context, the selective nature of human evolution exhibits contrasts as per individuals or a group at international stage. The difference is in the physical, emotional, mental, and spiritual nature that drive one's body, feelings, attitudes, and behavior.

The selective nature implies that some people are faster, wiser, more robust, involved, or active, and the like. Contrarily to others who are slower, dumber, weaker, unengaged, or passive, and the like. The actives always intend to dominate the passive (Zacharias, 2014-17, RZIM). However, the model that Fitzpatrick advised was an interactive approach in which the source of anxiety was not static in one challenging culture but in the process of experiencing the host environment abroad. Thus, the model was suitable for long-term immigrant groups in transition.

The same model was very problematic for CI users in a host environment abroad. A successful adjustment of a CI user may occur if a local therapy is available for support to drive away difficulties and stresses.

Lombard (2014) presented the self-identification exercise and the subpersonality model that support international individuals. The training aims for intervention and management of the affective-behavior-cognitive (ABCs) of culture shock. Lombard stated that changing oneself is the best decision to utilize the cognitive component of the ABC.

The cognitive percept consists of dealing with stress and anxiety by practicing the self-identification exercise and guidelines. The guidelines express integrating the subpersonalities and then managing identity conflicts (Kiley & Vaisey, 2020). Lombard

recommended to harmoniously synthesizing as a whole. But, at the CI user's social identity, there was deafness disability, the inter and intra related emotional status, and the conditioned spirituality as per faith coming from the hearing and hearing from the word of God (Zacharias, 2014-17, RZIM). There were also phono-centrism at day and ocular-centrism at night (Oudshoorn, 2020).

The dimensions mentioned above represent the basis of human social existence that require a synchronic treatment for the proper positive social change outcomes (Lombard, 2014; Presbitero, 2016). Oberg (1960) advanced that a dislocated or hosted individual may develop two behavior patterns in the host environment abroad. The host in the external conditions of the individual environment assumes insufferable the situation of the persons suffering from culture shock. At the same time, the hosted individual is feeling weak, frustrated, and anxious. The patience and understanding of the sufferer could reasonably set things right in a timely healing period. Oberg stressed that individuals are not born with a culture though, temporary getting away from ethnocentrism would lead them to acculturation. On the other hand, an individual is born with the capacity to learn and use the culture. Lock and Nguyen (2018) stated that something about the nature of a cultural relationship to an individual contains a value labeled as the interactional deliverable outcomes (IDO) from all, including CI users (Castellanos et al., 2018).

Review of Cochlear Implant Description and Population Category

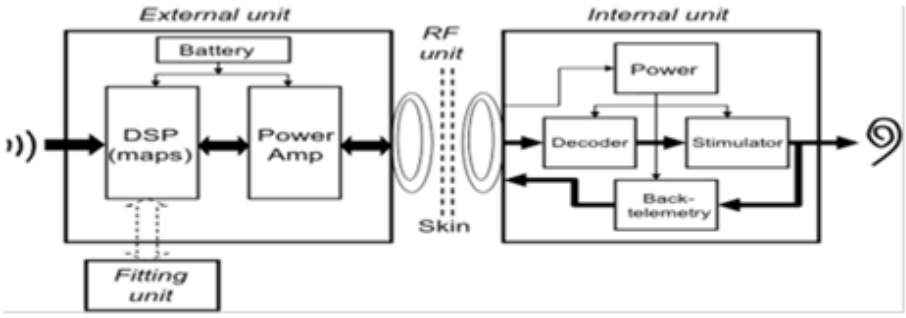
The CI is a surgically implantable electronic device that provides a sense of sound to a profoundly deaf or severely hard of hearing (Mitchell-Innes et al., 2018). It partially

restores hearing by bypassing the normal hearing mechanism in the inner ear. Instead, the electrical stimulation of the auditory nerve through the cochlear acts on fibers that survived the loss of hair cells. The fibers then fire and propagate neural impulses to the brain, which interprets them as sounds (Moteki et al., 2019). The description of a cochlear prosthesis comprises technical and performant perspectives shown, for instance, in the system features of the CI device by the manufacturer (Zeng et al., 2015).

Based on the following component interaction and the environmental setting in quiet, noise, and audiologist inputs (see Figure 4 below), the CI system unit includes four units that are external, radio frequency (RF), internal, and fitting units.

Figure 6

Modern Cochlear Implant: Internal and External Units



Note. From "Development and Evaluation of the Nurotron 26-Electrode Cochlear Implant System," by F.-G. Zeng, S. J. Rebscher, Q.-J. Fu, H. Chen, X. Sun, L. Yin, L. Ping, H. Feng, S. Yang, S. Gong, B. Yang, H.-Y. Kang, N. Gao, and F. Chi, 2015, *Hearing Research, 322*, p. 188-199. (http://dx.doi.org/10.1016/j.heares.2014.09.013). Copyright 2014 by ELSEVIER B. V. Open access article under CC by NC-ND. Reprinted with permission.

The external unit fosters name and critical features, processing strategies, and the number of MAPs. MAPs are programs susceptible to improve sound access performance requiring adjustment at the input to the electrode arrays implanted into the cochlea. The data rate for transmission assures the features of the radio frequency (RF) unit connectivity and carrier. Also, the internal unit acquires the total stimulation rate, number of current sources, maximum current, and some fitting units. The number of reference electrodes represents the features of the intracochlear stimulating electrode arrays, measure of simultaneous stimulation impedance, and local connectivity or a native device interface (NDI). The NDI allows dialog between the internal implant modulator and an external device for communication (Peixoto et al., 2014). Finally, the interaction between the units composing CI systems and the environment produce a measurable performance. The CI systems comprise the circular organization, exchange, and unit systemic management (Bertalanffy, 1975).

The targeted population sample includes managers and professional medical practitioners supervising the PCIP for end-users. The testing, activation, and release of the end-users implanted device precede the follow-up of the post-cochlear operative phase (Büchner et al., 2017; Peixoto et al., 2014; Trukhanov et al., 2020;). The post cochlear implantation carries on speech perception and production in a continuing process therapy. However, the difference exists for individuals born without a cochlear organ. The biomedical engineered cochlea manufacturing consists of using microelectromechanical system technology (MEMS) techniques to carry out the device and multi-electrode arrays of cochlear intra-stimulation (Svatosa et al., 2015). The tests

of the existing auditory nerves take place during the biomedicalization process of the implantation phase. The said phase occurs before and during surgery to the end of the CI activation before the release following the impedance testing (Deep et al., 2019).

Appraisal of Cochlear Implant Device

Entwisle et al. (2018) presented a diversity of CI user population update following technology trends. The bilateral implanted patients demonstrate improved speech perception and hearing in noise. In addition, the patients show significant improvement in sound localization than in their performance with a single implant. The recent version is a hybrid CI that is only 10 mm in length. The hybrid is inserted into the cochlea and aimed to stimulate the eroded region responsible for high-frequency hearing and the entire low-frequency region of hearing.

The most recent and entirely implantable device bypassed the mandatory dry and relatively stable environment requirements for the CI. The entire system sited underneath the skin has a tiny rechargeable long-life battery, a small microphone with a high sensitivity detector of sound through the skin while filtering the body's internal noise. CIs does not restore hearing but only provides a process solution for intelligent speech production after perception. The advancement in processing gains depends on improving speech recognition and perception in noise and music appreciation (Sladen et al., 2018).

Evaluation of Cochlear Implant Impact on Performance

Mauldin (2015) reported that deaf individuals suffered from auditory isolation. For a deaf or hard of hearing individual, becoming CI users leads to gain confidence and increased ability to function in society. Following the improvement of the devices, the

quality of life for patient end-users with hearing loss enhanced and the upcoming generations. Nevertheless, testing the benefits mentioned above occurs in a host environment abroad. Goldstein and Keller (2015) implied that any CI user loses the common environmental perception and interaction in a foreign region when hosted. Boisvert et al. (2020) argued that the following factors do not influence the CI speech performance of post-linguistically deaf adults.

The factors such as (a) gender, (b) level of education, (c) language acquisition, and (d) age of children to whom severe and profound hearing loss occurred later than fifteen years old had little or no influence on CI outcome or performance (Sladen et al., 2018). Without influence on the CI performance, the factors might convey a customized device such as an auditory brain implant (ABI) instead (Deep et al., 2019). Thus, exploring the management strategies of a culture shock among CI users in a host environment abroad might have restrained limits. The consideration mentioned above allowed applying the Causes of Culture Shock Scale (CCSS) to CI users. However, Goldstein and Kelley's findings presented normal hearing (NH) factors that contrasted end-user’s performance in the College students’ lay theories of culture shock.

Internal and External Aspects of Cochlear Implant

The prediction of the internal events of the lifespan of a CI would be possible by utilizing dynamic psychology, as per the concept of intra-individual variability across time (Saillot, 2015). Murray and Schaller (2016) claimed the enhancement of systematic biology with the essence of neuronal signal transmission (Shinde & Kurhekar, 2018). The signal would lead to identifying the origin of a particular behavior for the control of the

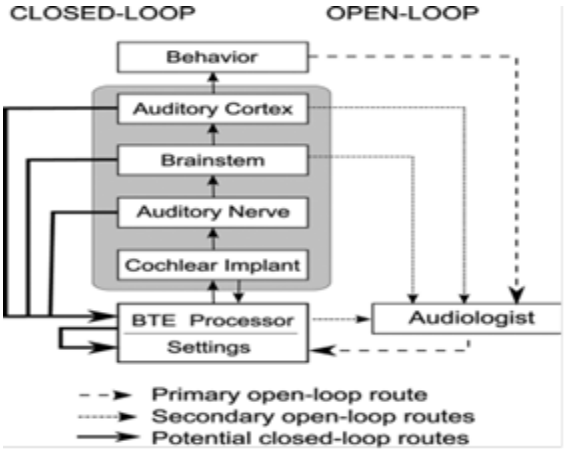
capability. Combining system biology, dynamic psychology, and other engineering applications would organically translate the onset of cochlear malformation or its anatomical absence in the inner ear (Shinde & Kurhekar, 2018; Svatosa et al., 2015). The other engineering applications are imaging and microscopy, simulation of cochlear morphology, and intra-fluidic dynamic (Chan et al., 2018). The brain involvement in auditory systems indicates an auditory brain area that interprets neurochemical signal carriers throughout the auditory nerves.

The external aspect of the CI concerned the interaction with the environment. Figure 5 indicates an inside organization of CIs fostering open and closed-loop systems for the primary open-loop route. The interpretation of GST explains that the purposeful systems are subsystems (Bertelanffy, 1975). Subsystems serve the purpose of external entities, such as their masters, creator, inventor, or users as a whole. The subsystem of the whole system is purposeful. The differentiation of purposeful systems defines the number of their functions. The number of processes allocated to a purposeful system describes its uniqueness independently of the type.

The type may be open or closed purposeful systems. The purposeful, open system has an environment such as input and output or dialog or full-duplex communication with an audiologist. But the closed purposeful systems do not have such an environment.

Figure 7

Modern Cochlear Implant: Open and Closed Loop Systems



Note. The open-loop system functions allow the audiologist to stimulate a CI electrode, elicit a verbal response, and adjust a setting on the BTE processor accordingly. From "Towards a Closed-Loop Cochlear Implant System: Application of Embedded Monitoring of Peripheral and Central Neural Activity," by M. M. Laughlin, T. Lu, A. Dimitrijevic, and F.-G. Zeng, 2012, *IEEE Transaction on Neural Systems and Rehabilitation Engineering*, *20*(4), p. 443-454. (https://doi.org/10.1109/TNSRE.2012.2186982). Copyright 2012 by IEEE. Reprinted with permission.

Only the subsystem back-to-ear (BTE) processor had direct access and measurement capability in the inner ear and beyond. The BTE processor is susceptible to read-only or monitoring functions such as the auditory cortex, brainstem, and auditory nerve.

The envisioned goal of a closed-loop CI aimed to automatically access and analyze neural responses from various levels in the auditory systems. When modified,

both hardware and software could convey better performance to the closed-loop CI systems. The system's configuration describes above demonstrates the system's autonomy to act where human beings still have limited or not attaining capacity or manipulation. The mechanisms running in a closed loop may be monitored and accessed for retrieving data or reading only. The memory systems allow the utilization of the information acquired and its use in modifying the system.

The BTE processor runs software to track neural responses over time. Onboard wireless technology could send and log this data on a personal wireless device such as a smartphone. A smartphone may be remotely accessible by an audiologist. The open systems are responsive to inputs from the environment and capable of changing over time. These systems are dynamic with the capability of self-internal adjustment to adapt to environmental circumstances. The stability or instability of the open systems may be due to their ability to respond to environmental inputs and feedback loops to those inputs. Their instability provides opportunities for change. The changes such as further reorganization or restructuration may take place preceding emerging hierarchical orders. The environment could be, for instance, a product or a process that influences the CI user.

The process could be, for instance, a therapy depicting the deliverable from the CIPS. The benefit of the therapy would be the therapeutic acquired value, the therapy outcome such as verbal expression through speech. Also, the use of the therapy may be, for instance, the expected outcome of an auditory-verbal therapy (AVT) for children or speech recognition and intelligent speech production for adult end-users after a full session package practice (Percy-Smith et al. 2018). Mugge et al. (2018) conceptualized

the end user’s expectation of both benefits and reliability attributes of the product or process or both. The product or process attributes are the behaviors or attitudes of the patient or CI recipient's preferred results when procuring the product.

Percy-Smith et al. presented the AVT as the concurrent work outcome of an audiologist, a psychologist, a speech therapist, parents, and a sponsored association such as the AG Bell Organization. Liu et al. found that the postoperative process refers to the PCIPS carrying on the values like the process software upgrade. The software would acquire novel process features, and the adaptability could portray the interest toward environmental dynamics assimilation to enhance the quality of care against culture shock. The elements of the overall implantation process comprised (a) hearing screening, (b) CI and surgery, (c) embedded software, (d) software configuration, (e) stimulating electrode arrays, (f) preoperative process, (g) perioperative process, (h) wound healing process, and (i) activation process.

The post-implantation process may comprise hearing rehabilitation and speech therapy or speech recognition and intelligent speech production. Mauldin (2014) reported that hearing rehabilitation may concern the learning process that carries on essential sound perception and advanced sound perception. Speech therapy may involve speech recognition and intelligent speech production.

Internal Aspects of Post-Cochlear-Implantation Process Similarities

Percy-Smith et al. (2018) stated that the vitality to detect damage early enough anticipated the preventive measures. For instance, a damaged component or software segment could induce an error of other systemic elements of the AVT for children. These

values would be dimensional or measurable characteristics of therapeutic process components. Therefore, the control factors influence all produced values in the therapeutic speech process.

The CI activation time characterizes the transfer of some partial routine executive functions from ocular to premature phonological or vocal and auditory systems. The hearing systems imply vital features of the phonological loop. The loop fosters loaded sequential processing and verbal practices to build a self-controlling filter against noise and strengthen focus (Castellanos et al., 2018). The onset of severe and profound deafness that preceded the time of the CI activation defined the margin period of sound deprivation (Mauldin, 2014). Mancini et al. (2016) found that the CI users' learning capacity depended on the relative time of participation as an achievement debut.

The speech deprivation period and age of either implantation or the starting point of learning sign language are factors of a deaf individual end-user ability and understandability (Blom et al., 2017). Thus, when grown, the deaf individual end-user acquires a related and limited coping capability (McRackan et al., 2019).

Internal Aspects of Post-Cochlear-Implantation Process Contrasts

Ng et al. (2016) recalled children end-users with additional disabilities and better access for non-English speakers. At the time, Mauldin (2014) investigated children's internal development and defined the cochlear implantation process as a method of retrieval for training the brain hearing area inside (p. 137). Thus, creating the pathways typically called mapping, which intends to develop the brain's ability for auditory

processing (p. 139). The test of the brain's ability occurred through the executive function, which was the ability of an individual to achieve a requirement.

The effects of neurocognitive function are an indicator of degraded auditory systems or an onset of deafness in both children and adult groups. Adult end-users served to predict the identification and evaluation of the future learning potential of children CI users. A combination of sign and speech compared to speech alone in a classroom learning environment constituted a probing test for adult end-users (Blom et al., 2017). The duration of deprivation preceding either implantation or signing described the causality determined in correlation with an identified executive function vulnerability.

Potential of Selected Management Principles

Deming (1982) initiated TQM to meet a current product quality under pressure started by customer demand. The quality, upgrading quality control practices, and efficient technique aimed to meet the organization's high-quality demand costs and competitive position. The improvement signified a decline in human errors to decrease rework or waste of the labors from product design, production, and process inception. Statistics tools use carried on tracking, measurement, and evaluation of the quality of the product and workforce for concrete improvement.

Deming underlined the quality, productivity, and competitive position (QPCP) theory to underscore the obligation of the management. Feigenbaum stated that the organizational leadership recommended the total quality control in engineering management (TQCEM) for quality management to develop an appropriate improvement plan. An established integrated system comprised the quality development, quality

maintenance, and quality improvement efforts of various groups in an organization. Feigenbaum technically used the term Control to describe the process of delegating responsibility and authority for management actions. The delegating process aimed to transfer a detailed obligation package while retaining satisfying results from the pilot project overseas on one hand. On the other hand, Juran (1988) posited that the process consisted of a systematic series of actions directed to achieving a goal.

Features of Management and System Theory

Bertalanffy (1975) similarly stated that every living organism was an open system that maintained itself in a continuous input and output mode. An open system was a system in exchange of matter with the environment and presented import-export transactions, internal building-up, and breaking-down of constituent materials. Regarding the theory strengths, Rousseau et al. (2018) argued that the seeking-goal capability of a feedback chain allowed the circulation of causal inputs and monitoring feedback information for the correction of fluctuation to maintain the state of homeostasis, which is goal-oriented stability targeting. Ramage and Shipp (2020) stated that the aspiration from the organism goal-seeking behavior exhibited purposeful behavior of self-maintenance of their conditions to achieving their goal.

Arabi et al. (2018) promoted the function-oriented model interpreted to highlight the CI manufacturer, the users, and the continuing processes for better interaction in a host environment. As fundamental for positive social change, all three aspects represented a bundle package product-service system (PSS) that fostered a sustainability feature (S-PSS) for a better business transaction. Severe environmental legislation may

denote FDA regulations. In the cochlear implantation process, the rule presented some flexibility that relegated negotiation room for medical device producers to adapt to the advancement in technology and applications.

Estrada and Romero (2016) presented the systemic approach to product-service systems across the life cycle. The strategy aimed to conveniently cover the CI, implantation, PCIPS, and outcomes. Estrada and Romero, in the topology of the product-service systems (PSS) across the life cycle, proposed System Quality Attributes (SQA) ontology. The above ontology was, at the time, an argumentative concept in process of standardization. The said concept above would be purposefully approached by understanding the functions of the PCIPS.

The combined PSS and SQA noted PSS-SQA allows cutting the additional cost of the PSS relative to a decrease in the uncertainty of a predetermined PSS functionality that behaved like a SoS (Masior et al. 2020).

Assessment of Management and Internal Psychosocial Aspects

Saillot (2015) presented the social usefulness of the dynamic psychological approach as remarkably potential since the study allowed a better comprehension of the *bizarre evolution of events* and manage them sometimes. The *management* of this *bizarre evolution of events* concerns the practice of psychotherapy. The exposed point of view presents then a clear distinction between temporal and dynamic approaches. The difference is directed only in using the psychotherapy fundamentals to handle the dynamic to adjust the temporal. In other words, able to evade over the subject's available forces to direct the temporal change of their personality.

Dynamic psychology intends to treat temporal events using dynamic approaches featured by dynamic systems to solve differential equations of cross-time variables. Thus, the translation of the sequential evolution of information entities evolving unpredictably and uncontrollably may express anatomical formation or organic physiological growth. If so defined, the justification for applying the translation to a dynamic system and system biology approach would be necessary, and of interest in the management of system biology. The above-said bizarre evolution events correspond to uncertain and non-governable evolution related to behavioral and medical issues for modeling.

Shinde & Kurhekar (2018) presented systematic biology as a research tool to be used. Gene regulation assures an opportune moment of a gene expression manifestation at an adequate onset of early development. The state of regulation requires determining the cells' acquisition of appropriate and specific functions. Murray and Schaller (2016) posited that the gene aimed to describe mental and biological processes. The processes above may identify a root cause or the duplicate that may reflect a new physio-stability dynamic. The said dynamic serves as a reliable backup for screening mental disorder conditions in a relationship with the neuro-psycho-immunology investigation of a dynamic cognitive behavior in a longitudinal development.

Quality Perspective Review

Samaras and Samaras (2016) claimed to deploy safety, security, and usability (SSU) to forecast, predict and eradicate an eventual breach to protect legitimate informational interests and confidential data for patients. Arndt et al. (2016) adopted a strategic goal to control the production quality of knowledge, services, or products in a

distributed value creation process of a global production network. Finally, Mohammadipour and Sadjadi (2016) examined the methodology for optimizing an imminent project during turbulence.

Mohammadipour and Sadjadi acted to expedite delivery based on the tradeoff between cost, quality, and risk. Also, Lager (2016) recommended a mandatory requisite for top management of innovation and technology in the process industry for business-to-business (B2B) collaborations. Pomirleanu et al. (2016) investigated managing service quality in high customer business-to-business contact (B2B) services across domestic and international markets, Telemedicine, and Information Technology. Trukhanov et al. (2020) presented a design method with a high reliability level. The reliability corresponded to a probability that the device could last a least a specified time under specified experimental conditions (ISO 13485).

Palozzi et al. (2020) defined Telemedicine as the use of medical information exchanged from one site to another via electronic communications to improve a patient's health (www.americantelemed.org). The equipment systems consist of, for instance, an interactive video conferencing, allowing a physician and a patient to connect from remote sites while instantaneously attending to each other (Strohmeier, 2020). Thus, Telemedicine helped bring medical specialists such as otolaryngologists to remote patients (Khairat et al., 2019). A CI user in a culture shock environment located abroad might have access to a physician specialist, disease-specific care, or a speech-language pathologist. More specifically, to a culture shock expert for backup and advice.

The FDA engaged to safely guide humanity through quality and medical device's safety and medical device industry from collapsing. The Title 21 Code of Federal Regulations (CFR) and ISO 13485 convey the medical device industry and the FDA leadership to a dialog for an investigation. The conversation carries on the benefit of understanding the suffering of a needy individual from adverse events. The events could or may occur when using medical devices to survive. Sciacovelli et al. (2017) recommended using the objective quality indicator (QI) tools in the management to enhance both tool efficiency and awareness of undertaking corrective and preventive actions.

The quality indicator (QIs) criteria mainly apply to the CI biomedicalization's pre-, and perioperative process steps. The validation of the implemented system to manage the QIs occurred through the participation in a model of QIs or an external comparison program such as the Deming Excellence Prize Award Program. In addition, different care operators in all countries collaborated and actively cooperated to implement Country-Specific Action Plans (CSAPs).

Status of Management Structure in Integrated Implant Environment

In the management structure of the PCIPS model, the protocols introducing the settings and the CI organization (CISORG) may rely on four worldviews. According to the reflection on intra-individual and inter-individual variabilities, Sankaran (2020) stated that, over the course of time, the dynamic experience built up, factor risk preference, and decision-making ability are indications of the variabilities in a cultural cognitive project. Second, there is a divergence of opinions about disability and normality of deafness

between the American disabled Act and the FDA rules. Third, the difference of the views may convey to design and establish CISORG as an international organization to carry out appropriate care for CI users in coping capability challenges (Koskinen & Breite, 2020).

Sankaran (2020) suggested adopting, in international transactions, a more robust regulatory framework and increased leader's responsibilities. The risk management toward an intervention at a location overseas may translate at both grid and group-focus locally at higher levels as part of the worldview categories. Sankaran added that the types of the worldviews may divide into four segments: grid high and group high or hierarchism, grid low and group low or individualism, grid high and group low or fatalism, and grid low and group high or egalitarianism. The flexibility of the management structure chosen between hierarchism and egalitarianism may adapt to the region, social, and cultural standings. The format may allow procuring contractual individuals or groups a mandate to complete objective actions.

The standardized actions such as interventional therapy ought to secure the quality of the PCIPS model in the host environment abroad (Smith, 2016). Feigenbaum (1961) strategically addressed the TQCEM, describing the TQC in BQM as efficient. The effectiveness relates to system's efficiency for integrating the quality development, quality maintenance, and quality improvement efforts of various groups in an organization (Marchiori & Mendes, 2020). Samaras and Samaras (2016) integrated the groups such as Telemedicine, Telehealth, and eHealth in the health information technology (HIT) for healthcare delivery organization (HDO) environmental system.

Feigenbaum stated that BQM involves product or construed service-care value for quality deliveries and outcomes.

An organization would consider an integrated structure that may include product and service deliveries from design to follow-up sequences of quality of care through customers' voices (Mugge et al., 2018). The pilot project activities consequently would include medical practitioner training (Strohmeier 2020). The actions might constitute a task force planned for execution in an accredited certified regulated environmental premise in a host environment abroad where dislocated deaf CI users would operate temporarily or in a professional career (Arndt et al., 2016). Also, in regional health construct, Koskinen and Breite (2020) declared that the goal was to build a closed system organization convertible to open health systems when ready for international patients. Koskinen and Breite referring to Luhmann, presented that the basic of organizations as social systems are membership systems.

The culture shock regarding CI users in a host environment abroad describes a disturbance to the integrated system of PCIPS (Samaras & Samaras, 2016). The integration defined in the product-to-service system inclined to a function-oriented business model dedicated to the quality of care for CI users' social change (Kiley & Vaisey, 2020). Arabi et al. (2018) presented the sustainable product-to-service systems concepts as the extended producer responsibility (EPR). The EPR might entail the PCIP to contribute to better environmental performance by abiding by the market customization (Pomirleanu et al., 2016). The market uniqueness may describe the fragile communication capability of the CI users in the host environment abroad. Estrada and

Romero (2016) reported the SoS intended to attain higher capabilities and performance unconceivable with a typical system configuration.

Every system composing the SoS would reach authentic goals regardless of separation from the rest of the SoS. The combination PSS-SQA, as a complex system, portrayed a compound of heterogeneous elements such as products and processes. The above-said components may be comparable to the systemic combination of the CI, cochlear implantation, and PCIPSs.

Rationale of Selected Concepts

The theoretical influence on the model may refer to Ng et al. (2016) that informed the research in management about exploring the challenging issues of managing healthcare (Keating & Katina, 2019). The investigated management strategies concern the healthcare service delivery against culture shock affecting CI users in a host environment abroad. The potential service-care available aims to impact the quality of care throughout an international service organization (Koskinen & Breite, 2020). The difficulties in planning service provision for funding CI services in the United States of America may be evident. Oberg (1960) alerted the uncertainty in the service organization, management, and long-term planning.

The shortage of staff, skills, and training capacity followed the changing technology precisely. Arndt et al. (2016) questioned the organizational connection of international transactions in the material and services exchange market to corporate activities. And the exchange occurred between identified partners and suppliers as the active nodes of the distribution networks and global production (Sankaran, 2020). Then,

the cochlear implantation center may embrace the total responsibility for long-term servicing, managing, and maintenance (Cornelissen et al., 2021). The alert was substantially a call for change in the organization and management of the PCIP.

The decisive change for strategic solutions would influence participants such as professionals in the organization and management to meet a consistent quality of care. Arndt et al. suggested eight dimensions: Costs, time, quality, sustainability, process knowledge, product innovations, flexibility, and proximity to markets. About the culture shock symptom on CI users in the host environment abroad, Goldstein and Keller (2015) found the indicators as parameters of the process customization based on the designated population's lay theory of culture shock. Goldstein and Keller chose the presented parameters as predictors of intercultural adjustment. The adjustment above described a process highly dependent on cultural knowledge seeking and the selected self-efficacy, openness to experience, ethnocentrism, foreign language interest, and cross-cultural competence.

The participants may be the United States or English-speaking Canadian national care provider's managers or professional medical practitioners supervising the PCIPS for end-users. The social identity could translate the outcomes of the individual's lay theories of culture shock into two causal factors. The factors include internal causes fostering poor stress management, identity confusion, and prejudice and external causes carrying on differences in language, communication, and surroundings. Therefore, I committed to applying the results of U.S. College student's lay theories of culture shock in a case study with a qualitative approach. Goldstein and Keller (2015) underscored the internal

outcomes of the quantitative investigation of the student's lay theories of culture shock. Also, LaRay (1976) determined that the significant concentration of the causes of the culture shock pertained to the psychological conditions as the primary culture shock symptoms (Oberg, 1960).

I strategically considered all internal convergence related to syntheses of the CI, PCIP, culture shock, and management principles. The primary management relies on system theories, internal psychosocial aspects, quality and reliability, and service and cost. The resulting internal outcome from the investigation constitutes a platform of the CSM strategies needed among CI users in a host environment abroad. The value of the service-care might depict an external aspect of quality or what the implant does well. The aspect would represent the potential outcome of the applied systemic therapeutic processes**.**

Culture Shock Factor Address

Applying the “English-Canada or U.S. learner’s lay theories of culture shock” outcomes to managers and supervisors of the CIPS for end-users will compensate for the limitation declared in the quantitative inquiry approach (Goldstein & Keller, 2015). The rule concerning a qualitative method of investigation recommends completing the research study overall. Assessing the sojourner’s contact with host nationals and language ability portrays another new dimension to the study. The partiality of the theory was for the sojourner adjustment that matches, for instance, a needy medical visitor, mainly involved in the language learning, communication, and surrounding such as post-lingual adult CI users. The internal causes aligned at the levels of a post-lingual deaf adult with

previous loss of cultural competence depending on the period of speech deprivation and etiology of the deafness (Chen et al., 2019).

The hosted individuals tended to attribute intercultural adjustment difficulties to external, which describes the extra and inter variability that foster prominent differences in the cultural environment. Instead, the concerned variability was internal and less visible or intraindividual variability. This structural factor closely parallels the distinction between psychological and sociocultural components of intercultural adjustment (Fitzpatrick, 2017; Goldstein & Keller, 2015). The adjustment emphasizes the well-being and fosters the personality variables and social support as opposed to fitting in. The fitting-in respectively portrays cultural detachment, concerns on relationships with host nationals, and language ability.

Thus, the hosted individuals' focus is on difficulties in sociocultural adaptation rather than psychological ones as the source of culture shock (LaRay, 1976; Presbitero, 2016). In the management of the PCIPS, the population of participants was the United States and English-speaking Canadian managers or supervisors of the program or process system for end-user follow-up. The outcomes of the learners' lay theories of culture shock comprise two causals' factors: Internal causes fostering poor stress management, identity confusion, prejudice, and external causes conveying differences in language, communication, and surroundings.

Cochlear Implant Users in the Host Environment Abroad

The external variability or extra-variability may predominantly express the CI user's dynamics in a defined environment. The dynamics describe a psychosocial

concordance to the nature of the environment as based on individual ability to both adapt and interact or coping potentials (Palombo, 2017). Based on the quality of both managers or professional medical practitioner supervisors and the PCIPS, the resulting observable inputs and outputs parameters reflect the expecting care value. The internal variability or intra-variability contains predominantly CI user's characteristics, which present the primary implantation process (Saillot, 2015). The process above described the "*biomedicalization*" of the CI in the pre- and perioperative phases.

To produce an intelligent speech that would assure better communication, a CI user must acquire strong self-esteem as a foundation to build both culture and language fundamentals (Kobosko et al., 2018). The fundamentals aim to serve as both shield and weapons to survive in harsh cultural conditions such as culture shock. The CI device internal aspects foster two configurations. The closed-loop section with the automatic capacity to access and analyze neural responses from various levels in the auditory systems and display finding results, and store data. It is autonomous and read-only (Deep et al., 2019; Zeng et al., 2015).

The second section, hosting dynamic open systems with the capability of self-internal adjustment, was responsive to inputs from the environment and adapted to environmental circumstances. Thus, the open systems could change over time and shift from stability to instability for growth. Contrarily, their instability may also present danger in that the system may lapse into a closed state. A closed state then would become unresponsive to environmental inputs, such as artificial sudden deaf. Or also, sound

deprivation period where inner cells and neurons reorganize in a closed state of hearing incapacitation.

Palombo (2017) added that the development of communication theory that made it possible to examine the context contributed to the meaning of the message contents and the form in which they were encoded, such as in CI or acoustic hearing. With this development, it became possible to add the vital dimension of human communication's role when applying these principles to human organisms. The state of internal and external status aims to respond to individual's lay theories of culture shock as they abided by the internal and external aspects of the resulting investigation of individual live characteristics and dynamic circumstances in a host environment abroad (Goldstein & Keller, 2015).

Post-Cochlear-Implantation Process in Host Environment Abroad

Liu et al. (2016) found that the CIPS comprises pre-, per-, and postoperative process components. These processes hold the flexibility conveying to both internal such as software upgrade and external or end-user adaptability. The adaptability depends on the nature of the environment. A host environment abroad fosters culture shock factors (Fitzpatrick, 2017). The successive elements of the CI biomedicalization include all the processes of implantation in the pre- and perioperative phase of surgery (Deep et al., 2019; Zeng et al., 2015).

Mauldin (2014) established that cultural and linguistic fundamentals are the basis of self-esteem and social interaction in the postoperative phase. The fundamentals accompanied the delivery of an intelligible speech that assured better communication

(Sousa et al., 2018). However, the distinctive ability to cope and adapt to harsh cultural conditions may alter built-up emotion, essential self-esteem, self-efficacy, and other parameters (Goldstein & Keller, 2015; Fitzpatrick, 2017; LaRay 1976; Oberg, 1960). Mugge et al. (2018) stated that controlling the quality would entail detecting the quality deterioration of the caring processes to expose parameter discrepancy. The protocols may also apply for speech recognition and intelligent speech production in adults.

The care provided or delivered to CI users through the PCIPS would represent observable inputs-outputs parameters in which the features aim to generate care-value. From the optional categories of the existing implanted cochlear prostheses findings, there are four types: the *cochlealess* individuals implanted with a biomedical engineered cochlea and CI, bilateral implantation patients, the hybrid CI into the cochlea, and the totally implantable CI (Boisvert et al., 2020; Deep et al., 2019). For all, the factor most influencing the performance of the end-users is the processor. For the CI speech performance of post-linguistically deaf adults, the (a) gender, (b) level of education, (c) language acquisition, and (d) age of children whose severe and profound hearing loss occurred later than fifteen years old do not influence the CI performance.

Examination of Internal Psychosocial Culture Shock in End Users

The quantification of caring processes points to Saillot (2015). Saillot advanced that when the scales of life events occurred, the cognitive interpretation and emotional state play a significant role in the psychological importance of lifespan events. The life-course describes complex systems that constitute an individual's physical and social environments. The environments imply internal and external changes. The changes

indicated an individual's inside and outside or environmental changes, respectively, called intra- and extra- or inter-individual variabilities (Castellanos et al., 2018).

In addition, the dedication of the class of autoregressive integrated moving average (ARIMA) models allows the construction of the process behaviors that are randomly in time submitted to random shocks of an individual's life-course. ARIMA are modeling tools used in applied time series analysis for forecasting and prediction. As part of the statistical package for the social sciences (SPSS), those tools may serve as a solution in determining culture shock factors that would constitute the elements altering displaced CI users in a host environment abroad.

Saillot (2015) stated that the main interests in the study were the emphasis made on using uncertain and ungovernable impacted complex systems. All temporal modeling occurrences through the process ARIMA intrinsically suggested considering the randomness of forces of change. Far from the initial mentioned cognitive interpretation, all the minor or significant lifespan events and their resulting meanings were unpredictable. The events were probabilities that should problematically be of dynamic characteristics using a longitudinal investigation. The ARIMA approach allowed the interpretation procedures.

Walker and McGlone (2013) implied that the systemic causes and consequences of the problem of culture shock may concern the centrality of the social world; the centrality of the social world is the vitality of functioning in the social world to our survival. The case of the social world that fosters the PCIP takes place in a host environment abroad. Walker and McGlone argued that the centrality of the social world

is proportionate to the abnormality of social behavior because the social environment provides the evolutionary pressure that physiologically influences the human brain.

If the centrality could foster environmental culture, a visceral rejection of that culture might unconsciously generate a dysfunctional relationship. A flawed alliance might contain social stressors leading to abnormality. Also, the said aberration may allow neurodevelopmental and psychiatric disorders. These disorders may foster culture shock factors that are shocks to intra-individual or internal culture. Those factors may victimize impaired individuals or group-focus CI users and create internal or inter-crisis, signifying the culture shock.

However, often, repeated physical and mental exposure to these stressors of chronic nature might activate neuroendocrine. And, activated neuroendocrine could load the allostasis consisting of a kinetic process to regaining a stable system condition or homeostasis. Saillot presented psychotherapy or dynamic psychology to drive time-based events in an individual personality using dynamic methods for altering unconscious, ungovernable, and random dysfunctional relationships with, for instance, a host environment abroad. The approach features were dynamic systems to solve differential equations of cross-time variables through ARIMA. AMIRA designates a process that implies intrinsic consideration of random forces of change.

Perspectives of Quality in Post-Cochlear-Implantation Process

The systemic gap aspect of quality from the FDA portrays a solution concerning the CIPS. The CIPS product is a systemic process that aligns with the aforementioned systemic view for the quality solution. The target is to support innovation in the next

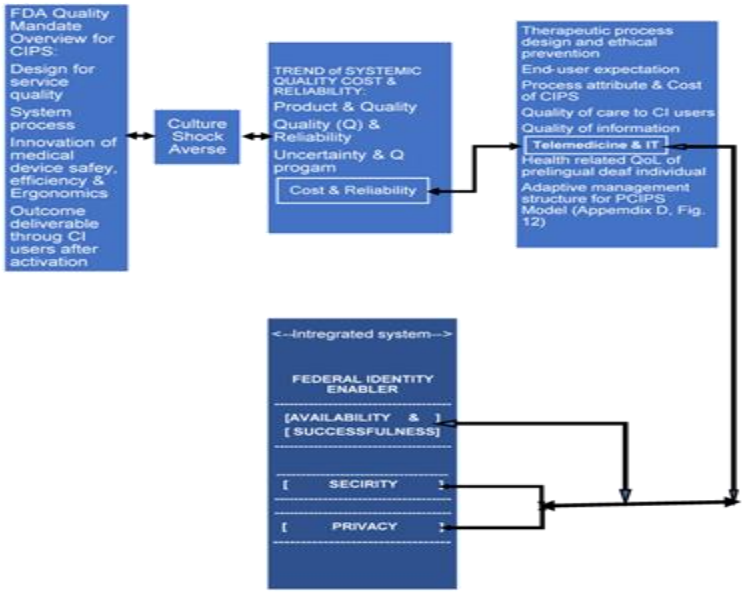
generation of medical devices for safety, efficiency, and ergonomics. The CIPS outcome is deliverable by and throughout CI users in a post-implantation phase after the activation. The culture shock adverse events require an investigation to identify and evaluate the aspects and influences that may deter CI users' communication features in the host environment abroad (FDA, 2011-14).

The deterioration of the communication features in the host environment abroad requires examining the current trend of systemic quality cost and reliability. The trend fosters the inference of the perception of the product and quality, quality and reliability, and uncertainty and quality program. The cost and reliability also influence the quality of the PCIPS. The objective carries on the (a) reliability of the therapeutic process design and ethical prevention, (b) end-user expectation and process attribute reliability, and (c) CIPS cost.

The trend finally conveys the (a) quality of care to CI users, (b) quality of information, (c) Telemedicine and information technology (d) health-related quality of life of prelingually deaf children, and (e) adaptive management structure for a PCIPS model. The Telemedicine challenges from a technology standpoint are to balance the security and privacy requirements with availability and success. One of the key technology enablers that facilitate the management of these relationships is the Federated Identity. The federation standards play an essential role in enabling the inter-organizational, inter-security domain for integration (Figure 8).

Figure 8

Platform Trend of Cost and Reliability for Using Telemedicine in Culture Shock Adverse



Note. Interpreted data from federated identity organization

The federated identity status allows enterprises and trading partners to securely link and exchange information while complying with privacy and industry regulations (FDA, 2011-14). The role of parents with children undergoing CI biomedicalization substantiates the start of an individual journey. The journey's beginning necessitates the training and documentation within the investigation activities for TQM. Zeng et al. (2015) presented that the postoperative phase and speech therapeutic activity targets include testing, measures and evaluation of hearing, speech, and musical factors conducted locally as well as remotely. The remote options would portray Telemedicine, Tele-practice, Telehealth, and eHealth from headquarter, partners, and or contractors in the distributed network systems (DNS).

A displaced CI user's concerns may require applying the recommended protocols for culture shock prevention (ISO 15189: 2012; Walker& McGlone, 2013). The estimate of the quality cost and reliability of the service-care values would occur following compliance regulation (FDA, 2011-2014). The executive office of a CISORG headquarter could be managed through the TQM requirements. The typical refers to Deming fourteen points of the management model. The innovation complies with the FDA regulations.

Arndt et al. (2016) underscored that hybrid organizational roles such as administrative functions would include managing the PCIP as a system. The activities that occur at remote locations are also connected and accessible through Telemedicine, eHealth, Telehealth, or Tele-practice. The site may outsource medical practitioners as a task force in a regulated environmental premise. The location of a host environment abroad represents the zone of turbulence expressing the culture shock factors. The factor categories ranged from emotional despair to cognitive and memory burden-related anxiety and their multi-alterations despite the speech signal matching.

The speech signal matching describes an assistive input signal designed to compensate turbulence in an incoming normal auditory signal. The CI users, in general, might have cochlear prosthetic access to speech signal matching that was not a normal auditory signal. The necessity of the matching explains the low performance of CI users compared to normal hearing (NH) individuals that indicates a growing reason for a gap difference (Klebanov et al., 2018: Mitchell-Innes, Saeed, & Irving, 2018).

Quality and Cost Reliability of Cochlear Implant Acquisition

The cost and quality reliability of the CI acquisition may rely on the whole CIPS. For instance, the AVT for children and protocols of speech recognition and intelligent speech production (PSR-ISP) for adult end-users are a package of tools for investing in all related items and events in pre-, per-, and postoperative phases (Percy-Smith et al. 2018). As per Juran (1988), a process consists of a systematic series of actions directed to achieving a goal. The goal in this context is the speech perception or hearing accompanied by an intelligent speech production or speaking. Thus, the inputs to the implant are processed information that run throughout human capability to produce or reproduce intelligent outputs (McRackan et al., 2019).

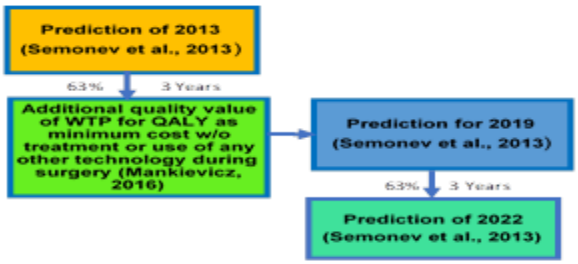
The outputs may demonstrate both understanding and learning capacity for development. The traditional health economic evaluations were the basis for determining the cost-effectiveness of a CI. The assessments of the quality cost applied to establish medical devices referred to an internal aspect of the cost-effectiveness. The well-defined cost-effectiveness in the conventional Health Technology Assessment (HTA) framework aimed to update compensation or repayment decisions through controlling agencies or national health service (NHS). In addition, the aim was to initiate marketing prediction (Sorkin & Buchman 2016).

In this investigation, I consider the direct cost of the whole CIPS based on the previous year's prediction compared to what is in the current market. Semenov et al. (2013) reported the CI acquisition cost in 2013 and predicted a 63% increase in 2016 and over. The prediction underscored an acquisition of direct cost. The health technology

assessment for bilateral cochlear implantation of Ontario in Canada evaluated almost $800,000 by the year 2023 (Health Quality Ontario, 2018). Semenov et al. predicted a required budget of $870,000 by the year 2022. The acquisition cost included the total operative cost on the market today without insurance. Markiewicz et al. (2016) presented the societal willingness to pay (WTP) threshold for an additional value of the quality-adjusted life-year (QALY) in dollars (Figure 9).

Figure 9

The Trend of Cochlear Implant Process System Direct Cost



Note. Data from Semenov et al (2016).

Estimate of the current market—direct cost trend of holistic cochlear implantation process system (CIPS). WTP = willingness to pay; QALY = quality-adjusted life year. Interpreted from "Age-Dependent Cost-Utility of Pediatric Cochlear Implantation," by Y. R. Semenov, S. T. Yeh, M. Seshamani, N.-Y. Wang, E. A. Tobey, L. S. Eisenberg, A. L. Quittner, K. D. Frick, J. K. Niparko, and CDaCI Investigative Team, 2013, *Ear and Hearing*, *34*(4). (https://doi.org/10.1097/AUD.0b013e3182772c66).

The aforementioned additional quality value was necessary for calculating headroom in analyzing the cost of a new medical device. The Markiewicz amount

presented in 2016 was the minimum cost without treatment or any other technology during the surgery. The addition of the direct expenses conveyed the total operative cost that surpasses the average price. The average serves for the acquisition price in this study referring to the previous predictions. The estimated market needs depend on the volume of the medical device to produce for optimal decision making.

The decision has to be made before the design for manufacturability and ensured a predictive return on investment (ROI) (Markiewicz et al., 2016). First, the clinical measures of speech perception and language supported the validity of parental involvement through global parental assessments compared with a well-validated health status instrument. Second, the quality-adjusted-life year (QALY) served to evaluate a model of the timing consequences for this intervention from a societal and economic perspective. Third, Semenov et al. found that the execution of the planning for costs of care collection is retrospective as per (a) preoperative, (b) operative, and (c) postoperative expenses. Finally, Semenov et al. reported the costs add-on and benefits of implantation compared between the three age groups referring to a non-implantation reference.

The children implanted at age less than eighteen months of age gained an average of 10.7 QALYs over their projected lifetime. The lifetime mentioned above compared 9.0 and 8.4 QALYs for those implanted between eighteen and thirty-six months and at less than thirty-six months of age, respectively. The medical and surgical complication rates were not significantly different between the three age groups. Therefore, the mean lifetime costs of implantation with full coverage were the same between the three groups.

The approximation was $2,000/child/year or 77.5-year life expectancy, yielding a cost per QALY for the youngest, middle, and oldest implant age groups, respectively.

Markiewicz et al. posited that cochlear implantation led to net societal savings after incorporating lifetime educational cost savings. The savings were for the youngest, middle, and oldest groups at QALYs, respectively, over the child's projected lifetime. Semenov et al. concluded that early intervention at less than 18 months with cochlear implantation was related to the higher and longer life improvements. Also, the amelioration was economically valuable for classroom placement of children implanted 18 months earlier. A significantly higher integration rate edified the progress.

The rate corresponded to a full mainstream classroom integration in the youngest group at 81% compared to 57% and 63% for the middle and oldest groups, respectively ($p < 0.05$) after six years of follow-up. The improvement from the youngest indicated even direct costs of implantation without a greater incidence of medical and surgical complications when compared to cochlear implantation at older ages. This saving came from the CI intervention at the younger age of fewer than eighteen months. However, based on poor quality cost resulting in the health-related quality of life, normal hearing national children were far better than national children CI users. I consequently assumed that displaced CI users in a host environment abroad are lesser performant than national normal-hearing children or adults. The culture shock factors are among factors of deficit toward deaf people end-users and require an investigation.

Management and Cost in Post-Cochlear-Implantation Process

Feigenbaum presented the TQCEM, including the definition of the TQC for BQM. The BQM comprised eight stages of the industry recycle depending on an increase in both customer demand and quality costs. A demonstrative selection of some spectral opinions about CI users in a host environment abroad edify the choice made relying on a number of the incoming feedbacks from different managers. The lists of feedbacks might illustrate an estimated average of a corresponding selection.

The basis of selection was the planning capability of the clinical management considered as a whole. For example, the strategist could approach the groups of managed candidates as units in the planned years for an average QALY (Liu et al., 2016). The convenience for more years would reveal a higher rate and may require software use for accuracy. Markiewicz et al. found that the traditional health economic evaluations of developed medical devices are vital in determining the cost-effectiveness of a CI (Health Quality Ontario, 2018). The cost mentioned above is an internal aspect of the quality cost evaluation and then defined in mainstream HTA (Garrison et al., 2017).

The HTA informs the reimbursement decisions by regulatory agencies or NHS to initiate the imminence of marketing activities. Percy-Smith et al. (2018) reported that an AVT product is a teamwork effort. The cost of the CIPS includes all processes described through sustainable PSS-SQA or S-PSS-SQA of a SoS (Estrada & Romero, 2016). The team fosters certified *orthophonist* or listening and Spoken Language Specialists (LSLS), a speech-language pathologist (SLP), an ear, neck/nose, and throat (ENT) otolaryngologist, an audiologist, a clinical psychologist, and the parents of the child CI

recipient. As a result, the therapeutic composition in the CIPS of a deaf or hard-of-hearing person after surgery at Otolaryngology is substantial.

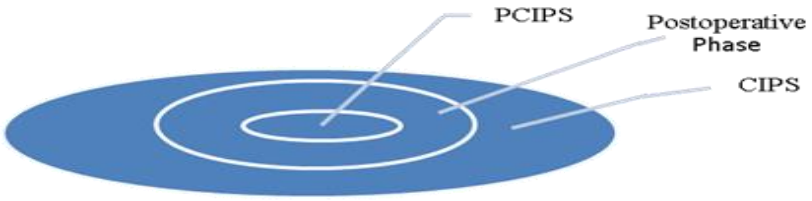
Remote assistance with AVT or Tele-practice contains product attributes that aim to attain some characteristics of hearing and speaking referring to a normal hearing (NH) individual. Liu et al. (2016) reported that the health utility index 3 (HUI-3) contains attributes of references of humanity from birth to death under the World health Organization management. And the AVT benefits would be the deliverable care-value or outcome appreciated as the quality of care through the end user's quality of life (Percy-Smith et al. 2018). Therefore, the benefits may pertain to the health-related quality of life (HR-QOL) and measured by determining the QALY. Markiewicz et al. stated that the headroom was the maximum cost incurred per patient or per device unit.

Were also included the societal willingness to pay (WTP) and other QALY. The headroom per patient is valued through the QALYs by all the treatment costs incurred in the service care; the considered value of the service-care is the total operative cost of a CI acquisition in one hand. In the other hand, Liu et al. (2016) estimated an updated average cost without insurance or warranty worst case. Finally, the return on investment (ROI) carries on the headroom per medical device unit, excluding the cost of the device development times the volume of the potential demand on the market (Cruz & Haugan, 2019). The demand is the number of deaf people in need of a CI. Markiewicz et al. specified that the headroom analysis combined with the calculation of ROI is a feasible, practical, and informative tool for assessing the potential commercial viability of medical devices under development.

Life Cycle Costing of Post-Cochlear-Implantation Process System

Figure 10

Cochlear Implantation Process System Composition



The CIPS comprised the CI biomedicalization including (a) preparation, (b) perioperative or surgery phases, and (c) the beginning of the postoperative phase before activation (see Figure 10 above). Therefore, the primary tree of the life cycle cost presented the life cycle cost (LCC) process of the PCIPS. Thus, the life cycle cost began with acquiring the CI through the total cost of the operative phase and the fees for sustaining the acquisition during its lifetime, as shown in Figure 11 (Barringer, 1998).

Figure 11

Life Cycle Cost Tree of the Cochlear Implantation Process System

Note. Adapted from *Life Cycle Cost and Good Practices* [Paper presentation], by P. Barringer, May 19–22, 1998, NPRA Maintenance Conference, San Antonio, TX, United States.

The following steps could be determined relating to data collection in chapter 4 based on input information from the managers and professional medical practitioners supervising the implant lifetime cost modeling. First, the CIPS and the cost estimate distribution could reflect the preoperative and CIPS model.

Considering the current good manufacturing practices (cGMP) guidelines through the FDA Protocols, I could determine (a) gathering of cost estimates distribution between preoperative and CIPS model, (b) acquisition and sustaining costs for one and planned short-term years, and the CIPS sustainable items of importance, (c) CIPS sustaining costs with and without a 12% discount during short terms planned years, (d) net present value of fix when failed, (e) break-even chart. Next, I simulated (a) CIPS item acquisition and sustaining cost at a 12% discount rate and the CIPS effectiveness, (b) lifecycle cost cumulative $present value of CIPS vs. Total Reliability, (c) quality cost dollars per equivalent CIPS output, and Recipient Health utility Scores, and (d) the value of the quality cost dollars per equivalent CIPS output.

Management, Culture Shock, and Care of End Users

The problematic nature of a CI servicing organization reflects a PCIP with continuing systemic challenges (Keating & Katina, 2019); the challenges concern adapting the use of technology to a specific culture in the context of technological generalization (Pirozhkova, 2018). Thus, the factors identified in the process of PCIP affect the coping capability of displaced end-users in a host environment abroad. In addition, the culture shock in the host region influences the journey of the end-users

during the PCIP. Lombard (2014) stated that, in general, culture shock altered the neurophysiological ability to cope in a host environment abroad.

A servicing application may drive an investigation or evaluation of the postoperative support (Keating & Katina, 2019; Wójcik et al., 2020). The establishment in home country could foster suitable remote assistive service delivery such as therapy. The assistance may promote the use of data and wisdom centers to carry out engineered outputs to the end-users referring to coping difficulties encountered in the host environment abroad (Khairat et al., 2019; Strohmeier 2020). A demonstration of the application activities at the end might be strategically essential through a nonprofit organization, such as CISORG (Godinho et al., 2020; Kuan & Thornton 2021). The beneficial values could consist of the favorite outcome that a CI user would anticipate and expect when acquiring a product or the implant. Percy-Smith et al. (2018) reported that in therapeutic packages used in the PCIPS, the end-users access all specialists, environmental sound, and communication systems.

End-users access would promote skill development in listening and speaking a language. Cooperation may carry on during the vital phase of, for instance, the child recipient school year by offering to the parents and the school an anticipated support system, before reaching adulthood, for the best child's academic, social, and emotional outcomes. The teamwork may provide prime access to a psychologist, developmental pediatricians, neurologists, and speech-language pathologists. Nevertheless, a host environment abroad could be limited as the individual confronts an unusual setting (Lai et al., 2020; Lombard, 2014). Volgger et al. (2015) stated that Luhmann's system theory

features the autopoietic dynamic of duplicability. The dynamic above engenders auto decision-making capability in an open healthcare system (Koskinen & Breite, 2020).

The service management in an open healthcare system intends to apply to the regional healthcare establishment project. The projected implementation of region health content and essential assets are potentially multidisciplinary and requires using the hybridizing theory combined with system theory (Cornelissen et al., 2021). Volgger et al. reported that an international social enterprise, such as a CI servicing organization, may portray interdisciplinary features through hybridizing view of an organization. The features foster parameters and challenges that occupy prime difficulties resembling what the global and local levels would present. The project may be based on the open system model of a nonprofit organization to assist end-users in a host environment abroad (Rousseau et al., 2018).

The service care structure in the postoperative quality of care may convey the competitive organization position of creating care value (CCV) and bear a dissenting or non-conforming hybrid system organization (Wolf & Mair 2019). The organization mentioned above entails developing structures and processes concerning various stakeholders and pursuing multiple and often conflicting goals. Thus, sometimes engaging in divergent or inconsistent activities. The virtual support center (VSC) of the CISORG might foster activity interdependencies (Strohmeier 2020). The moves would target better communication for CI users during adverse circumstances such as culture shock.

The speech evaluation might take place through continuing quality patient care (CQPC) and at the proper time for both the HR-QOL and QALY systems (Markiewicz et al., 2016). The organization characterized as dissenting hybrid might run management establishing new avenues to conceptualize, measure, and communicate success and performance (Kannothra et al., 2018). The cited venues would ultimately have implications for building and maintaining legitimacy through pluralistic contexts. But Cornelissen et al. (2021) stipulated that featuring genuine hybrid and the manifestation of hybrid organization activities revealed a sense of governance that went beyond coping with competing prescriptions (Keating, & Katina, 2019).

Regarding the HR-QOL of prelingually deaf children, children born with deafness medically qualified as disabled. The instrument used in the evaluation of their HR-QOL were health utility index revision 3 (HUI-3) and the Nijmegen Cochlear Implant Questionnaire (NCIQ) (HealthPartners, 2014-2017; Lui et al., 2016). Liu et al. indicated that the NCIQ is a self-assessment HR-QOL questionnaire fostering end-users specifics for quantification. The assessment also serves the QOL of post-lingual deaf adult speakers with unilateral CIs. Sufficient clinical trials and research aim at providing utility indexes, although preoperative baseline served for psychometric and social subdomains (Klebanov et al. 2018).

The CI benefits include the above subdomains by an average increase in a postoperative score of 25%. The results of this study suggest that in the PCIP phase, deaf children with severe-to-profound hearing loss have increased social activities, made friends, felt happiness, and did not suffer anymore from depression and irritability. These

findings show that the appropriate use of a CI has a positive influence on prelingual deaf children who attain independence in their life (McRackan et al., 2019).

Servicing the Post-Cochlear-Implantation Process System

Wolf and Mair (2019) introduced the expansion perspectives of an organization from a nonprofit servicing to remote assistance activities for a CISORG. The aspect of a double activity program would contain a charitable nonprofit dedicated to compensating the main service activity program by outsourcing and global insourcing services in shortage circumstances (Cornelissen et al., 2021). The aforesaid hybridizing aspect would foster the main concentration of activities within a PCIPS. The system may include the applications of culture shock prevention protocols. In the postoperative phase, the use of Telemedicine, Telehealth, Tele-practice, and eHealth would, at the same time, contribute to the overall data collection and training.

Bonnechère et al. (2016) recommended considering the following criteria to avoid biases: Applying ethics, precision, accuracy, availability, and portability against a price related to cost-effective and easy to use. Bonnechère et al. stated that tools for patients or CI user evaluation might meet the following criteria for clinical usefulness: First, the measured parameters must correlate well with the practical capability. Second, physicians and therapists should not observe or semi-quantify the measured parameters. Third, the measured parameters of normal and abnormal conditions must be distinguishable.

Fourth, the performance of the evaluated activities must be intrinsic to any alteration of the measurement techniques. Fifth, the accuracy and the reproducibility of the measurement must be required. And sixth, the format of the communicated results

must readily be identifiable in a physical or physiological analog. The service planning and platform may portray Telemedicine, Telehealth, and eHealth in Health and Information Technology (HIT). The subcomponents above pertain to system environment of Healthcare Delivery Organization (HDO), such as CISORG (Kuan & Thornton, 2021).

The planned HDO may provide services to a remote care center of service care delivery such as therapeutic provision. The projected intent is to deliver service care to displaced deaf CI users during speech therapy and perception phases such as continuing PCIP. An alliance of HDO commission for high-reliability healthcare at the local level is necessary for contributing to the security, safety, and usability (SSU) of interoperable medical devices of a system as a whole (Samaras & Samaras, 2016).

Summary and Conclusions

The rationale initiating the above synthesis illustrates an efficient development model of TQM in the integrated biomedical engineering-healthcare industry (Deming, 1982). The business biotech would abide by the rules and regulations of the FDA (FDA, 2011-2014). The rules and regulations, when applied, yield an added value to the quality and safety of the personnel, medical and biomedical professionals, patients, and end-users or customers. In the literature review, I synthesized the knowledge obtained from the underlying concepts, literature, and recommendations. A CIPS would be essential for continuous process operation (Estrada & Romero, 2016).

The CIPS comprises two subsystems (a) CI biomedicalization that includes pre- and perioperative or surgery phases, the start of the postoperative phase before activation, and (b) the PCIPS (Deep et al., 2019). If a PCIPS would fail, the jeopardized process

would shut down. The financial losses would incur, per lost hours, the gross margin of the involved Tele-practice and process therapy; Barringer (1998) advised finding a LCC alternative to determine the system's effectiveness from the implant design to the CI user's outcome expectation. Thus, an engineering methodology may apply in determining the PCIPS's LCC. The initial planned short-term years of the process effect of successful therapy would be a mandatory necessity to transcend bias and human error. The CISORG could initiate the process support center with program activities seeking customized corrective actions (Vu, 2020). In addition, the program may be a resource center for CI users facing cultural challenges when traveling overseas (Cornelissen et al., 2021). Thus, modeling the PCIPS may converge diverse views and values.

In Chapter 3, the case study design carries on the tool to explore a CSM strategy needed among CI users in a host environment abroad. The journey in a host environment may correspond to a continuous systemic process denoted PCIPS. I proposed to use NVivo tools to generate pattern categories for thematic analysis, given the interpretive modes of inquiry. The strategic management of the culture shock resulting from the highly targeted concentration of evidence and significance of the internal causes presented by Goldstein and Keller (2015) through the English Canada-U.S. learner's lay theories of culture shock. The feedback from managers and professional medical practitioner supervisors overseeing the program for end-users allow identifying and evaluating strategies.

The strategies above aim to convey a manageable PCIPS free of culture shock factors among CI users in a host environment abroad. I applied the GST based on an open

system regarding all other systems as solution-oriented approach (Keating & Katina, 2019). The relevancy of the system theory transversally cut across different domains of management. The whole system's components subsequently function to serve the whole and adapted to the environment contrarily to the mechanistic view. I planned to pursue a second investigation afterward to complete the research with testing and measurements. Another practical emphasis on the cost of quality for safety and reliability may convey the process operating cost of quality management. The determination take place for quality cost dollars per equivalent unit.

The unit describes managers or supervisors of PCIPS output per CI users or an average group of end-users. The group of end-users represents a profile of the feedback from participants. The participants are managers and professional medical practitioners overseeing the PCIPS for end-users. The quality cost relies on a selected factor responding to Health Unit Index-Revision 3 (HUI-3) and applying the dead-to-perfect health formula (HealthPartners, 2014-2017). The consideration of the reliability conveys the utilization of the combined reliabilities of both device and patient or deaf or hard of hearing CI user. The device reliability should be determined and tested by the manufacturer of the implant, and the reliability of an average care of end-user group carried on through the total cost of care (TCOC) and total cost of care Index (TCI) (Liu et al., 2016).

Chapter 3: Research Method

The purpose of this single case study with multiple units was to explore the CSM strategies needed among CI users in the host environment abroad. Feigenbaum (1961), Deming (1982), and Juran (1988) advanced that the responsibility of the manager is to measure the quality of a product or process. Management strategies also involve mitigating derivative factors such as transition shock factors of the state of loss and disorientation predicated by a change in one's familiar environment that requires adjustment (Fitzpatrick, 2017). The management strategies comprise detailed prerequisites that incorporate quality as the critical element. Managing a systemic quality of the PCIP serves as a reliable tool for assisting CI users in culture shock crisis and familiarizing successfully (Liu et al., 2016). There is a bound between this single case study and the United States and English-speaking Canada, regions from which CI users travel to the world abroad and encounter culture shock (Yin, 2018).

Research Design and Rationale

The displacement of CI users abroad carries compelling circumstances of irregularity that require normalization through management strategies. The overarching research question addressed which CSM strategies are needed among CI users in a host environment abroad. Pirozhkova (2018) affirmed that the choice of a research method must be made based on the nature of knowledge. The aim of the study concerns exploring quality management strategies to alleviate coping challenges in a culture shock environment among adult CI users.

The coping capability would occur in the PCIPS. At this stage, I intend, as per Yin (2018), to use a qualitative case study with multiple units, allowing purposeful sampling for my research. First, Goldstein and Keller (2015) used U.S. College students' lay theories of culture shock. Second, I plan to apply the outcomes to systemically explore the influence of culture shock factors in the PCIPS. Third, in a SurveyMonkey survey for managers and professional medical practitioners who oversee the PCIP program, I use an open-ended questionnaire to collect data on managerial or supervisory insights, opinions, and views (Moser & Korstjens, 2016). Fourth, Vasileiou et al. (2018) advised choosing to sample demographic characteristics that I might use to assess management awareness of the culture shock influence in the PCIP (Wattanacharoensil et al., 2020). Finally, I plan to identify and evaluate strategies for a manageable PCIPS free of culture shock factors among adult CI users' circumstances.

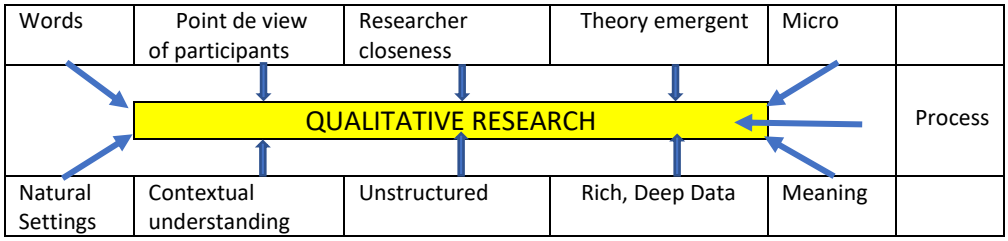
McFadden et al. (2016) presented the reliability of an assessment describing the tool to explore a quality management strategy to mitigate the culture shock factors in an individual such as an adult CI user during a journey abroad. The host environment abroad represents, for the end-user, a continuing systemic process that denotes PCIPS. I propose to use NVivo, and analysis of the outcome themes given the interpretive modes of inquiry. Westerman (2014) advised interpreting the effect of the culture shock factors for exploring improvement strategies. Broderick and Craddock (2013) compared the CI users to complex symptom system biology.

Kaivo-Oja (2017) found that the first basis of the tradition of scientific thinking is the idea of understanding reality. This idea backed up methodological principle

investigation linking to qualitative research and narratives that produce detailed stories. Kaivo-Oja presented the qualitative research method comprising words, points of view of participants, theory emergent, process, unstructured contextual understanding, rich, deep data, micro, meaning, and natural settings as well as my research close. Clark and Ivankova (2016) portrayed a qualitative case study as shown in Figures 12 and 13. The qualitative case study targets the concerned CSM strategies in a host and related model of the PCIPS.

Figure 12

Qualitative Research Composition



Note. Figure represents my interpretation of text by Clark and Ivankova (2016).

Figure 13

Qualitative Strand Model

Note. Figure represents my interpretation of text by Clark and Ivankova (2016).

If technology's progress serves people's well-being and happiness in the long run, adoption of the new device and techniques would be expected to increase. On the other

hand, Kaivo-Oja (2017) declared that technological development might be slowed down or even reversed if the outcome would not correlate with human welfare and happiness. Therefore, the social issues and patterns may be highly relevant for future-oriented technology analysis (FTA) methodology, and analyses.

The development of technology in organizational research requires both diversity and a multidisciplinary approach. Qualitatively, proper dissemination may well emphasize certain types of studies that may carry even more significant risks of deductive disclosure. These types may include studies of small-scale societies referring to studies relying on respondent-driven sampling and other incremental variations. Tsai (2016) recommended uncritically applying standards by providing a supplementary appendix for clarification of data sharing. Such policies, if appropriately implemented, could build a culture of data sharing that also facilitates critical, patient-oriented qualitative research as an approach to scientific inquiry (Levitt et al., 2018).

In qualitative research, a secure understanding requires a shield from disseminating certain types of material. The motivation for security would avoid altering the underlying data by, for instance, (a) withholding the material from written transcribed records or (b) maintaining a set of private shadow files separate from the official research record. Those records are similar to the detailed psychotherapy notes that therapists may store apart from medical records.

Role of the Researcher

Mazeley and Jackson (2019) remarked that the reliability or trustworthiness of the results obtained depend on my skills as a researcher in executing both method and

software. Thus, my background and experience relate to both personality and skills as potentials to be utilized in learning and understanding the most biases (Shakman et al., 2017). These biases may carry my subjective influence on the outcome instead. However, Ramani et al. (2018) stated that reflexivity concerning personal inspiration might attenuate negative biases for attaining objective results and maintaining the course of the intrinsic research concerning, for instance, coding and my researcher's self-awareness. I used my skills and deep understanding through theories, peer reviews, and current trends in a dynamic multidisciplinary field of interest (Renz et al., 2018).

My multidisciplinary experience in biomedical engineering and social enterprise carried on the overall philosophy of interest to contribute with integrity to research knowledge. Shakman et al. (2017) added that transcription of data collection in qualitative research through interviews might be appropriate and error free during the transfer process. I diligently analyzed and interpreted the code with professional integrity. I concluded by referring to all the above that credibility depends on the effectiveness of my research diligence. As a researcher, I intended to commit to and apply procedures with proven trustworthiness (Nowell et al., 2017).

Methodology

Clark and Ivankova (2016) reported three types of research methods. First, I selected the qualitative research method that aligned with my study instead of the quantitative and mixed methods approaches. Additionally, I chose a case study approach (CSA) instead of grounded theory, ethnography, phenomenological, and narrative approaches (Ebneyamini et al., 2018). I concluded my selection by comparing the case

study (CSA) and the grounded theory (GTA) approaches. The CSA portrays rich text generated through thematic analysis, with coding of accumulated information on the research topic of interest using the qualitative research method of inquiry (Yin, 2018). On the other hand, the CSA aligned with my research interests to create new theories using the GTA.

Regarding the CSA, Tomaszewski et al. (2020) stated that using theory in a case study helps in generating a broader perspective by using both structures and the researcher's views. A CSA fosters the problem explanation, context description, observable process, theme discussion, or its categories based on the targeted uniqueness of the case. Moreover, the CSA might carry on analytical methods using all other theories and concepts. Thus, Shakman et al. (2017) observed that the thematized or categorized systemic process concentrated on the case study's uniqueness. Yin (2018) stated that if a I want to study a specific group or a single group of people, a single CSA is the best choice.

The managers or professional medical practitioners who qualified for my study are those who oversee the PCIP for end-users in general (Andrade, 2020). Their professions or certified skills are related to otorhinolaryngology (ORL) follow-up services, related audiologists, speech pathologists and clinical language specialists, and clinical psychologists for adult CI users in the biosocial community program (Goh et al., 2016). I did not consider the certified parents and caregivers in the biosocial program for professional motherhood skills to assure the post-implantation follow-up for professional data intake, hearing stimulation procedures, and children's outcome reports. As part of

both quality of care and health management, the cited professional health services contribute to the PCIP, which follows CI biomedicalization. The implant biomedicalization describes only the pre-surgery preparation phases of the surgery for implanting the electronic device up to the step of activation for hearing and speech testing (Deep et al., 2019; Mauldin, 2014).

The PCIP includes hearing and intelligent speech (Percy-Smith et al., 2018). The success of the CI biomedicalization depends primarily on the receiver's willingness to accept (WTA), which is an intraindividual variable or CI user ability to cope with the device within by 87% (Goldstein & Keller, 2015). The remaining portion of 13% is the extra individual variables that comprise the end-users' neighbor and surrounding or inter individual variables and the environment. I wanted to discover managers' CI user migrating program and coping capability in a host location abroad where culture shock occurred. I also planned to target five units, two in the United States and three in English-speaking Canada. Both countries are English-speaking countries and global leaders in the cochlear implantation of deaf and hard-of-hearing individuals. Maxwell (2021) and Yin (2018) showed that qualitative research contributes to the literature in individual experiences and natural humanistic ways rather than through experimental situations.

The qualitative research aims to reveal the managers' and professional medical practitioners' individual experiences, relationships, and standards and procedures in the healthcare industry (Ebneyamini et al., 2018). The strength of the qualitative approach is the opportunity for flexibility and adaptability throughout the data collection and analysis process (Ramani et al., 2018). Based on Berner-Rodoreda et al. (2018), the qualitative

research method allows for interviewing designated professional and experienced participants. The qualitative case study method has a dual function, unit, and larger group of units that aim to be either illustrative or confirmable (Gustafsson, 2017). Every unit in my study pertains to a regional selected therapeutic center or otolaryngology department specialty of the PCIP and postoperative follow-up that I consider as process systems (Ng et al., 2016).

Participant Selection Logic

I explored potential participants and organizations that match my interests in LinkedIn and suggested my choice to the IRB for approval before contacting the participants. All predicted participants and organizations were unknown to me but identified as professionals and experts in managing CI users of all ages. Vasileiou et al. (2018) stated that participants' expertise extended on a large spectrum was favorable. The selection of the units relied on the language, implant use, and culture. The language was English, the culture was Anglo-Saxons, and the CI was the technology in use. The standard procedures are equivalent and competitive in both the US and Canada (Masior et al., 2020). The adult CI users who travel abroad entail the culture shock experience in a host environment, in which local language or culture is a foreign asset (Fitzpatrick, 2017).

Goldstein and Keller (2015) found that an individual’s copying capability is at stake in the host environment abroad. The management must procure tools required to mitigate culture shock factors and allow CI users to cope successfully in the host environment (Papke-Shields & Boyer-Wright, 2017). Therefore, I target the opinions of

managers and professional medical practitioners supervising the PCIP program. In my open-ended questions to participants, I profiled participants based on Presbitero (2016). Presbitero advised choosing a sample of participant overseers of the PCIPS for end-users referring to the demographic characteristics. The characteristics include length of work experience, number of tracked end-users, first experience when traveled abroad, and longest stayed abroad.

Goldstein and Keller (2015) used the U.S. College students' lay theories of culture shock that generated quantitative outcomes but required a qualitative analysis to complete the study.

I refer to Goldstein and Keller's resulting outcomes to systemically explore the influence of culture shock dynamics among the PCIP of the end-users through managerial or supervisory position. Thus, applying English Canada-US individual's lay theories of culture shock to question management or supervisory role about the PCIP or program of the end-users facing culture shock as a threat in a host environment abroad (Alam, 2021). The location timeline is the PCIP in a host environment abroad, in which culture shock occurred (Yin, 2018). The PCIPS drives continuing speech therapy and takes place in a host environment abroad. The location dynamics may be touristic, professional commute or other that assure the mobility of the CI users for good social interaction and positive social change (Fitzpatrick, 2017).

Instrumentation

As a researcher, I am instrumental in the qualitative design approach and data collection procedures. I execute the collection, protocol definitions of data collection, and

representation (Alam, 2021). The aspects of the questionnaire I design in the survey comprise (a) a questionnaire guide structure fostering survey questions that aligns with the study's research question (Einola & Alvesson, 2020), (b) written survey open-ended questions and statements asking participants to describe their experiences (Tomaszewski et al., 2020), (c) the length of the survey, and (d) clarity of the questions and statement comprehension to ease the understanding for effective closing. The aim is to organize a questionnaire guide to create an inquiry-based conversation similar to an interview protocol refinement (IPR) (Castillo-Montoya, 2016).

In the design of the questionnaire guide indicated in Appendix C for an open-ended survey format, I begin with introductory questions that naturally convey informal and general facts. Between the starting and the closing questions, I pose key questions that portray the most open-ended questions. At the end of the questionnaire guide organized to inspire conversational flow, I pose the closing questions that represent a thoughtful view and provide participants an opportunity to share their concluding comments. I close by expressing gratitude and my intention to stay connected and follow up. After the survey, I could not prepare a set of related follow-up document copies or summaries for each participant for member checking since the SurveyMonkey policy was anonymous. The aim was to capture an optimal sense of understanding of responses to the online survey questions from participants to increase reliability (Castillo-Montoya, 2016). My skills and triangulation were compensative.

In this single case study approach with multiple units, I use a qualitative method of inquiry through designed vital survey questions. The open-ended questions drive the

survey with questions flowing from previous responses to preliminary questions for demographic information (Roberts, 2020). I start the online survey by introducing the informed consent form. I include any concerns before stepping into the questionnaire guide for answering questions as a sign of consent. In addition, I show my email address and phone in case of any questions or concerns. I plan the following (a) preparing a set of questions for the questionnaire guide and check my instrumentality by addressing my potential biases, (b) constructing practical key questions as included in the questionnaire guide, and (c) implementing survey or instrumentation by segmenting the questionnaire guide in five sections: The introduction, transition, key, and closing questions followed by my closing statement (Finefter-Rosenbluh, 2017; Castillo-Montoya, 2016).

The protocol or guide fosters an open-ended survey, indicating the purpose and the format, and presenting the duration and terms of confidentiality. Contrary to the closed-ended survey, the open-ended survey comprises prearranged questions for keeping the exchange consistent on the topic of the study (Tausch, & Menold, 2016). Oltmann (2016) stated that using open-ended questions engage me as a researchers in diverging from scripted questions to seek clarification. In addition, I may incorporate reflexive journaling into the data collection process (Finefter-Rosenbluh, 2017). Reflexive journaling enables mitigating personal bias and beliefs throughout the qualitative research process (Ramani et al., 2018). Consequently, I raise unique ability to remain neutral toward the topic under study (Ponterotto & Reynolds (Taewon Choi), 2017). Ramani et al. (2018) indicated that using reflexive journaling identifies ethically crucial moments in which I could reflexively consider participants' perspectives.

In Open-ended survey questions, participants entail typing their responses into a comment box. Answers are then viewed individually or by text viewer tools or imported into the NVivo platform for pattern identification (www.surveymonkey.com). Yin (2018) stated that the aim consists of examining the data to generate realistic interpretation for analysis. A practical method for achieving credibility and trustworthiness (reliability and validity) rely on recording participant interviews (Olson, 2016). In an online survey such as the SurveyMonkey, the system conveys transcribed text documentation and reversal possibility use for member checking to validate credibility.

Renz et al. (2018) stated that I could enhance the reliability and validity of a case study by using multiple data sources for methodological triangulation. Yin (2018) stated that case study research allows me to collect data from additional sources that may include historical documentation and archived records. Still, I am limited to participants' responses to the survey, literature review, peer reviews, and expertise. I use the time, space, and person aspects of triangulation to analyze data from multiple data sources used in the study and find diverse views for validating the conclusions (Renz et al., 2018). Through triangulation, I analyze and compare the results of the open-ended online survey. However, a virtual face-to-face interview could offer a distinct advantage of observing social cues such as voice, intonation, and body language.

Iivari (2018) suggested that to enhance the findings' reliability and validity, I would review the transcripts using a member checking process. Unfortunately, I could not reply to participants since the policy via SurveyMonkey does not allow for member checking, a method to assure the consistency of my understanding of each participant's

answers. As a result, I could not execute the 15 minutes as planned before resubmitting the resulting resonance with their experiences to validate the report content. First, in selecting the culture shock (CS) factors and questionnaire, LaRay (1976) posited that the culture shock factors relate to three analytical dimensions categorized into three sections (see Table 1).

Second, Clark and Ivankova (2016) advised that a questionnaire guide may comprise the survey project description and central or transition question that would precede key questions. Third, Bazeley and Jackson (2019) stated that the questions to be asked can be: who, what, when, why, how, how much, what, for what is or with what results. Thus, I plan to develop relational statements of the text for generating code. The investigation consists of finding a model of managing a PCIPS for end-users in coping challenges in a host sociocultural environment abroad. Thus, the model describes a coping strategy based on individual's lay theories of culture shock outcomes (Goldstein & Keller, 2015). For verification, Zacharias (2014-17) stated that an attended sociocultural environment abroad may have the cause, meaning, ethics, and outcome as criteria to verify the coherence and correspondence of the managers or supervisors of the PCIP for end-users' circumstances.

The verification may assure if there are coherence and correspondence of the views of the participants. Dunwoody (2009) posited that coherence and correspondence exist between an individual socio-culture and the host sociocultural environment abroad concerning the CI users. In Table 1, I present data relating to resulting outcomes of entering suddenly in a new culture as per LaRay (1976). To enhance the investigation,

Goldstein and Keller (2015) established a context platform that carries internal and external attributes concerning learners' lay theories of culture shock. I present the questionnaire guide in Appendix C.

The investigation aims to find a managing paradigm of CI users' culture shock coping behavior in a different sociocultural environment. Based on a function as manager or professional medical practitioner who supervise the PCIP, answering the research questions intends to prospect a CI user in a host environment abroad. The open-ended questions in Appendix C conveyed to highlight the awareness of responsibility toward end-users' life experiences in the world. The strategy consists of influencing existing managerial tools to mitigate culture shock factors among displaced CI users in the host environment abroad.

Procedures for Recruitment, Participation, and Data Collection

Concerning participants, sites, and sampling, the targeted population for this single case study with embedded units, consists of managers and professional medical practitioners overseeing the PCIP follow-ups in a caring organization. Vasileiou et al. (2018) advanced that assumed participants must be eligible and successfully deployed and implemented strategies for a program such as a PCIP system. The participants aim at preventing or mitigating threats to attain a quality of the process and the effectiveness of the implemented system. The threats may include culture shock factors to the PCIP following the appropriate protocols and standards of the FDA requirements (FDA, 2011-2014). The participants are part of the effective implementation of the CI process system.

The potential participants must be well-informed and understand the existing dynamics in the organizational setting and exposure to various clinical experiences and situations (Moser & Korstjens, 2016). I locate potential participants at faith-based healthcare professional association in Boston and LinkedIn online public directory. I also plan and use LinkedIn® for recruiting vital organizations from out of the state (see Appendices B). Potential organizations that respond to my email request indicates their willingness to participate. I email the package of the recruitment letter and the informed consent form with the SurveyMonkey-link to a gatekeeper of a site organization after receiving IRB approval at Walden University. I expected Washington DC and English Canadian site-partners.

Relating to the sampling, Yin (2018) introduced the case study as a bounded entity, which means constrained to personal, organization, behavior condition, event, or other social phenomena (Crain-Dorough, 2020; Moser & Korstjens, 2016). There may be a blurry condition on the boundary between the case study and its context in spatial and temporal dimensions. The PCIPS for end-users represents a studied bounded system to answer research questions associated to the challenges endured by CI users in a specific environment abroad. Yin explained that the same case studies could also involve units of analysis at more than one level. Gustafsson (2017) called the bounded system study an embedded case study design. In contrast, Yin (2018) asserted that if the case examines only the program's general nature, it represents a holistic case study design. The critical point to remember is that the research question remains the determining factor for deciding on the research approach.

Regarding the type of sampling, Moser & Korstjens stated that the benefits of the case study sampling strategy rely on the sampling strategy of the single significant case. Yin (2018) affirmed that the potential considerable information outcome may be applied logically to other instances of similar characteristics as a logical generalization. How to draw the sample may depend on the factors contributing to the decision that would derive from (a) the expecting potential core experiences of sampling, (b) the shared dimension of the period of PCIP, and (c) the location where the experience occurred. The dimensions above are of particular interest as they may serve for comparing with other managers or supervisors of the PCIPS in the same settings or elsewhere.

The sample size of participants for this study consists of three to four members of each unit of PCIPS for end-users. I plan to apply purposeful sampling that is not random sampling to detect potential participants for the study. The non-random sampling strategies attest to choose participants by using predetermined criteria (Campbell et al., 2020). The rationale for using the purposive approach describes my needs for a specific category of participants who may have a typical perspective on the phenomenon in question (Renz et al., 2018).

About the sample size per population size to use for the planned study, Yin (2018) reported the absence of rules in the qualitative inquiry approach (Campbell et al., 2020). I plan to use a purposeful strategy for a single significant case with five embedded units. The selection of a small sample of a single case (N=1 unit), with the unit, equals the manager and professional medical practitioners supervising the overall PCIPS of the end-users. The five locations, including three to four units each, provide a margin of 15 to 20

units embedded in one case, or three to four program managers or supervisors per unit (Crain-Dorough, 2020). The choice is essential for enlightening the study's research question in the qualitative approach of inquiry. In addition, the membership fosters managers, and professional medical practitioners of one unit that oversaw a PCIPS (Gustafsson, 2017).

I targeted two centers in the United States and three in English-speaking Canada. The sample size is in the margin around 15, pending saturation of supervisory or managerial position in the PCIP program and follow-up therapeutic process centers. Volgger et al. (2015) stipulated that the management of health and migration aims to mitigate threats to migrating individuals. Through the case study and analysis, I plan to explore the threat of culture shock among CI users who migrated to a host environment abroad. The management strategies intend to mitigate culture shock as a threat to PCIPS.

Gustafsson reported that the units define different locations bound to a single case study. The case study fostering culture shock, end-users in a foreign culture, and the PCIPS are essential to the embedded units' decision. The cultural features drive related sounds, cues, and language challenges. Thus, the purposive or judgment sampling aims to capture diversity within the deaf and hard of hearing population of CI users (Maxwell, 2021). The bounding of this single case study with embedded units is to the United States and English-speaking Canada regions from which end-users travel in a host country in the world and confront culture shock.

The objective consists of capturing managers and professional medical practitioner’s viewpoints regarding the CI users coping with a different culture when

facing the culture shock threats in PCIP abroad (Maxwell, 2021; Yin, 2018). A single significant case may imply selecting a small sample of a single case—for instance, sampling an ensemble of managers and professional medical practitioners from five different units. I plan to obtain opinions about the CI users' post cochlear implantation programs in units. I am interested in the end-users' circumstances in a host environment abroad to explore CSM strategies.

I perform data collection online rather than virtual face-to-face. The open-ended survey to participants occurs after receiving Institutional Review Board (IRB) approval. The survey I plan to use consists of open-ended survey to carrying out predetermined questions for keeping the online questionnaire focused on the topic of the study relating to the research question (Roberts, 2020). The open-ended questions enable the participant to describe current practices and real professional experiences (Alam, 2021; Roberts, 2020). I limit the embedded units to two in the United States regions.

I follow the Walden University's IRB guidelines to protect the rights of the participants (Mozersky et al., 2020). In adhering to IRB guidelines, all participants read an informed consent form before clicking, at the bottom, on SurveyMonkey-Link to access the questionnaire guide. I could abide essentially by creating a professional bond for building trust with the participants. A comfortable atmosphere could be necessary for open and honest manners to respond to questions (Oltmann, 2016). I could advise the participants about an environment free of noise, heat, cold or electric shock, or magnetic or gravitational fields while responding to the survey. The survey comprised ten open-ended questions in Appendix C.

The online survey's open-ended qualitative survey offers a distinct advantage in providing fluidic and confidential responses through the SurveyMonkey submission. Social cues such as voice and intonation are not possible as planned. NVivo tools allow me to import the texts from the open-ended survey for coding and patterns. Thus, I may elicit summaries about the perceptions of participants (Wattanacharoensil et al., 2020). However, I could not conduct a follow-up to enable a member checking process for feedback review (Iivari, 2018); forwarding a copy of each summary to the participant was not possible through the SurveyMonkey policy of anonymity to verify my understanding of the participant's responses to questions for accuracy if additional information the participants would like to provide (Ramani et al., 2018).

I use an allocated flash drive to collect data and save it in a secure deposit box for five years, as specified in the participant consent form. After five years, I will destroy the flash drive data to protect the privacy of all participants. In a qualitative research section, a secure understanding is that specific material categories require protection from dissemination. The aim consisted of withholding this material from the written or transcribed record by maintaining a set of private shadow files separate from the official research or medical history.

Data Analysis Plan

Regarding data collection and coding, Wilson et al. (2017) referred to initiate contact with participants who meet the study's criteria. In my case, I confidentially contact, through LinkedIn electronic mail service, the potential chief officers or department leaders of interest and informed the IRB for approval. I then email a package

of recruitment letters and consent forms with a survey link to the questionnaire guide to leaders of a site organization or gatekeepers to be forwarded to a pool of managers and their team members. The managers and or managerial team members who may find interest and a willingness to participate and form a working relationship may contact me directly. The conversations include the expectations for participants, confidentiality, and my ethical responsibilities as the researcher. I indicate the convenient timing for the survey and location conditions for responding to the questionnaire in the informed consent. After recruitment and informed consent, the participant could discreetly connect per private email or phone in case of potential preliminary questions (see Appendix C).

In the case of a phone call or email contact, Kegler et al. (2018) suggested starting the scheduled conversation with a review of the consent form to ensure both terminology and intent. I could inform potential participants that the open-ended survey would last approximately 45 to 60 minutes. The participants could choose to extend the duration for more convenience. Oltmann (2016) suggested making the participants aware that at any time during the survey, the survey may cease at the participant's will. The primary recruitment criteria of the participants rely on their managerial or supervisory functions, such as managers and professional medical practitioners that supervise the PCIPS. Yin (2018) advised that selecting a small sample size allows me to use a data collection method fostering open-ended questions from the standpoint of the quality research guidelines (Campbell et al., 2020).

The step preceding analysis fosters written text or transcription from the SurveyMonkey for importing into NVivo platform tool for thematic categorization or

patterns before the examination. First, the respondents are managers and professional medical practitioners of the PCIPS (Alam 2021; Oltmann, 2016). Second, the responses are within the spectrum of the research questions for the case study with embedded units. Third, the questions' context underscores the self-perception of performance, issues, or experience of CI users in a host cultural environment abroad (Einola & Alvesson, 2020). Finally, the methodology to execute the process consists of theoretically identifying the labeled culture shock factors.

The factors resemble emotion, personality, unconscious impulses, and rational lesson prescription. LaRay (1976) reported the factors and analytical dimensions of the culture shock. The three different perceptions are physical, physiological, and psychological dimensions. The psychological status carry predominant factors of culture shock symptoms in the fourth section of Table 1. The overall symptoms present the following resulting factors (a) withdrawal or isolation, (b) hostile and aggressive attitude, (c) a longing for home or nostalgia, (d) aberrant concern over minor things, (e) compulsive actions, (f) poor memory, and (g) anger, stressfulness, and frustrations.

Knowing that the factors above are the point-of-entry to CI users' individuation, the next step is to find the interconnection or correspondence between initial types susceptible for enabling selective coding. The selective coding consists of building a story by connecting preferred categories in the psychological conditions, which abide by the dynamics of culture shock as factors. Data saturation occurs during analysis and through data collection. Therefore, appropriate data analysis is vital and begins with discerning relevant statements while emphasizing the significance of the researched topic

(Renz et al., 2018). Each participant could have the ability to receive a copy of the study summary.

Additionally, the expected sample size of fifteen is point and time-dependent, through which the data collection reaches saturation. The SurveyMonkey covers the choice of diversity into a unit to overcome the homogeneity and avoid fluctuation. The steps to achieve data saturation as per Alam (2021) comprise (a) checking the accuracy of the participants' shared information to confirm the interpretation, (b) asking the participant for possible additional information, and (c) performing the online member checking of received responses to open-ended questions with all participants. For triangulation, I use the resulting outcomes of Goldstein and Keller's study combined to commonality in Fitzpatrick's success factors and LaRay or Oberg's. Concerning biases as a researcher and author of the coding, I know where the difference come from and the origin of the contrast, as proof that the coding is a researcher's dependent.

The NVivo coding process categorizes the participants' responses by using my judgment as close as possible, referring to the question, the answer, and the context of the data flow per individual. Finally, the next step is about using data management techniques with NVivo software for coding toward analysis. I plan to manage data with NVivo software, a program used for qualitative and mixed-methods research. I use the software to enable the analysis of the unstructured text, literature review, and survey. I do not use audio, video, and image data, including live interviews, focus groups, social media, and journal articles (Alam, 2021).

Bazeley and Jackson (2019) presented that the data management technique through NVivo software contains a build-in capacity. NVivo recorded all indexes of identification regarding any original or resulting change. The said change is made to the sources during the process of the research or study and keeps the source intact. I use the SurveyMonkey software to create a transcription of the feedback from the survey. The software allowed the transfer of the transcribed information from a Microsoft Word document into QSR NVivo to organize the data for analysis and storage (Woods et al., 2015).

I choose to use QSR NVivo software to code the topics for analysis based on common themes properly. The proper coding facilitates the identification of emerging themes within the data. Coding entails seeking the concepts and themes derived from each survey to develop relational statements of the text (Alam, 2021). For triangulation, I also use Goldstein and Keller's (2015) study results combined with commonality in the success factors (Fitzpatrick, 2017) .

Issues of Trustworthiness

Credibility

I may finally conclude by referring to all the above that the credibility depends on the effectiveness of my diligence (Finefter-Rosenbluh, 2017; Yin, 2018). The significance of the procedure's efficiency applied in the process reveals the trustworthiness of my proven or intended commitment (Nowell et al., 2017). I project to determine the reliability and cost related to the PCIPS based on the resulting evidence. I plan to use TQM to monitor and control the reliability of the TCOC delivered through the

PCIPS and determine both related Dollar Value of the Cost of Quality of Care ($VC-QC) and the effectiveness (E) of the system (Barringer, 1998).

Transferability

Clark and Ivankova (2016) claimed that the reliability and validity of the qualitative research framework do not have the same implication in quantitative research. In qualitative research, terms like credibility, trustworthiness, and authenticity are used instead of reliability and validity. The term verification matches instead of validity to introduce qualitative research as a distinct methodological approach for research. The data collection in qualitative research through a semi-structural interview, for instance, is appropriately transcribed and error-free during the transfer process as well. Also, the code is diligently analyzed and interpreted with professional integrity.

Dependability

Bazeley and Jackson (2019) remarked that the reliability or trustworthiness of the result obtained depends on my skills in the method of execution and software. My background and experience are part of both personality and skills as the potential to learn and understand mostly the biases (Finefter-Rosenbluh, 2017). These biases carry subjective or personal viewpoint as a flaw into the outcome instead.

Confirmability

To attain objective results and maintain intrinsic research referring to coding and my awareness of reflexivity, positive and skilled subjective influence may attenuate biases (Clark & Ivankova, 2016). In the qualitative inquiry approach, my high skills as researcher, and deep understanding through theories, peer reviews, and existing trends in

a dynamic multidisciplinary field of interest are necessary. The research attributes contribute to understanding the overall philosophy of essential topics and support the research knowledge's integrity (Levitt et al., 2017).

Ethical Procedures

The following steps are used for good exchange practices applied to the online questioning process (Berner-Rodoreda et al., 2018). For a small sample size of fifteen or less, the same rules allow me to use a survey and ask open-ended questions from the standpoint of quality research guidelines (Yin, 2018). I design the e-recruitment letter such that the volunteer-participant read a consent form as required by the human relations review board. Afterward, (a) I go over the purpose of the study, (b) go over the amount of time needed to complete the survey, (c) go over the destiny of the resulting survey data, (d) guarantee to offer a copy of the survey report to the participant, (e) follow the questionnaire guide, (f) stay to the questions as they rest in the context of the central question, (g) make sure the survey fit within the time specified if possible. I do not apply steps (h) and (g) given the online questionnaire through the SurveyMonkey Policy; (h) give the caution for the location conditions during the survey and the date, (i) state respect and courtesy, and (j) offer few considerations and expectations for member checking before closing. Referring to Einola and Alvesson (2020), a questionnaire guide may comprise the survey project description and the central or transition question that precedes the key questions.

Morse (2020) recalled that the purpose of inquiry implying the stake is the reliability; the usefulness of the sample size is that it may serve as criteria of

improvement of both process and technological systems. At this point, the CIPS concerns the displaced end-users experiencing internal and external changes in a host environment abroad. Yin (2018) emphasized that the credibility of choice is in the universal selection that may lead to a single significant case study. Thus, the sample is bounding spatially and temporally to the selected regions such as the United States and English-speaking Canada. CI users come from bounded regions and travel to a host country abroad. Documents such as the national institute of health (NIH) certificate authorizing researcher involvement in the participant's life for scientific investigation and a copy of the questionnaire guide are in Appendices A and C.

The online time allocation depends on the managers and professional medical practitioners supervising the PCIP program. The other resources, such as public health resources and clubs of friends and families of CI users of New England, present opportunities to access the pipeline of credible organizations with managers and medical professionals involved in CI users' activities and follow-ups. Finally, I save the survey documents or transcribed survey documents as a text document source using data management technique with NVivo software containing a build-in capacity. Thus, assuring the preservation of the information, location, and referenced passages. All applied links of the text passages and annotations in nodes are visible only by me before analysis from the source.

I plan to use QSR NVivo to organize the topics from the survey throughout the research process. I use a recording device such as a flash drive as a valuable tool in the research process to ensure authenticity and verification of the responses (Al-Yateem et

al., 2020). I use the SurveyMonkey software to create a transcription of the feedbacks. I then transfer the transcribed information into QSR NVivo® to organize the data through a tree configuration. The tree is executable to sort the nodes by hierarchically or priority.

A first internal open parent-file that includes a child file survey contains the participants ‘responses format for NVivo coding. This preparation makes it ready for automatic coding. I then use the QSR NVivo® software to perform the coding of topics for transpiring the analysis. This organizational technique allows the cross-analysis of data from all sources and analyzes each source individually (Alam, 2021). Finally, I save any transcripts of data collected and any QSR NVivo coded data in this process on an assigned flash drive.

The flash drive remains locked securely in a safe deposit box for five years. After five years, I will destroy the flash drive to protect the privacy of all participants. Definitively, the advantage of the NVivo coding is that the tree configuration, for instance, allows getting to the theme more quickly than hand-coding. Eventually, a post-doctoral phase for a quantitative method of inquiry would consolidate the research for mixed-method research (MMR). The mixed method would convey the comparison of patterns, evaluation, and interpretation of similarity and integration between similar patterns. The control values will take place to quantify the overall significance of the study.

Summary

In conclusion, Clark and Ivankova (2016) stated that the quality of the conceptual framework applied to the studies in the health sciences fosters the quality domain as

adopted in the case study approach. This domain portrays quality indicators such as (a) rationale, (b) research question, (c) sampling method for qualitative, (d) data collection and analysis, (e) procedures for comparing and contrasting results, and (f) quality of generated inference. I demonstrate how to design a research project prototype for a case study approach using qualitative inquiry approach through the open-ended questionnaire survey. Nonetheless, the case study conveys an investigation that explores CSM strategies needed among CI users in a host environment abroad. Managing the quality of the PCIPS represents a way of mitigating the culture shock factors, which threaten the system quality. Thus, the system's management describes CSM strategies relating to the prescribed CI users' circumstances in a host environment abroad.

I use the resulting outcomes of Goldstein and Keller's study to anchor my investigation since they relate to any individual's lay theories of culture shock in a host environment abroad. Given that first, the deaf and hard-of-hearing CI users are in the continuous learning process. Second, Goldstein and Keller found that 87% of parameters involved in the culture shock are internal to an individual. My targets are the coping capabilities add-ons for solutions-oriented host environments abroad. Third, I plan to identify and evaluate strategies for a manageable PCIPS free of culture shock factors among CI users 'circumstances. I use open-ended survey for managers and professional medical practitioners who oversee the PCIPS for end-users.

The future endeavor entails utilizing the quantitative approach of inquiry to measure the outcome of the case study and carry out complete mixed-method research. The execution of testing for generalization through quantitative instruments would occur

in the postdoc. The research questions are: To what extent culture shock factors do interfere with the CI users? What is, on average, the CI users' capability to cope in the host environment abroad? Are there managerial tools to mitigate the found culture shock factors among CI users while displaced in the host environment abroad?

Chapter 4: Results

The purpose of this single case study with multiple units was to explore CSM strategies needed among adult CI users in a host environment abroad. Managers and professional medical practitioners overseeing the PCIPS constituted the population from which I obtained participants. As Liu et al. (2016) stated, consistency in managing the systemic quality of the process was instrumental. The quality of the process entails a reliable interaction of CI users in the host environment to which the single case study with embedded units is bounded (Gustafsson, 2017; Yin, 2018).

The overarching research question was the following: What culture shock management strategies are needed among adult CI users in a host environment abroad? First, the dislocation of the CI users in a different culture fosters interactional circumstances. Communication irregularity required normalization through management strategies. Second, the PCIP was a learning phase. Third, the deaf and hard-of-hearing individuals who became CI users adhered to social identity. Consistent quality of care and appropriate management were required to process the factors conveyed in the new identity. The elements were marginalization, less self-esteem, isolation, discrimination, irritability, anxiety, and distressed personality issues. Finally, I did not investigate for a pilot study.

Research Setting

I noticed a decline from partner Australian organization “H” due to pandemic victim Dr. X and an acceptance from partner organization "A" under anonymity conditions through SurveyMonkey.com. The pandemic organizational flow in healthcare

generally mobilized managers and team members toward crisis activities under strict discretion and surveillant confidentiality. This trauma constrained professional interaction between healthcare managers and incoming researchers. The way out was to send a link through a professional survey organization such as SurveyMonkey.com with a targeted audience in the healthcare industry. I addressed experts in CI or implantation activities through the membership of U.S. partner organizations and healthcare industries or organizations in the U.S. health organization and Canadian health industry.

This study was a single case study with multiple units concurrently involving the qualitative method of inquiry—this single case study involved multiple units selected by purposive sampling. The qualitative phase involved a literature review and an online questionnaire in an open-ended questionnaire guide collected through SurveyMonkey.com. No recording of interviews on tape was possible, as I was constrained by the COVID-19 pandemic in the healthcare industry and related reinforced confidentiality. Each open-ended question conveyed subquestion content from the main research question. I adopted convenience sampling to select 16 from the 105 online surveys. The response rate was equivalent to 16.80%. The survey participants were several and diverse cochlear implantation outlets in the healthcare industry.

Demographics

The targeted participants were managers and managerial team members such as PCIP program overseers, audiologists, otolaryngologists, clinical psychologists, and speech pathologists—all in the healthcare industry, hospitals, clinics, organizations, and specialized health research centers. The selected responders related to responsibility for

the number of supervised adult CI users and assumed either audiologists, therapists, or speech pathologists in hard-of-hearing individuals, non-CI users, or recipients, as they chose anonymity in their professional identity. The cited areas specialized in the field. Among the required 16 participants total, three were from U.S. partners with expertise in cochlear implantation who responded in 2020 as Unit 1. The remaining 12 responders targeted audiologists in the year 2021, including U.S. Unit 2 and Canada Units 3, 4, and 5.

There were nine self-declared males and four self-declared females for a total of 105 participants, among which 92 unknowns declined their identification and 89 disqualified through exclusion questions regarding management and responsibility for CI users. Based on the number of overseen adult CI users stipulated in the first exclusion open-ended question, the flow of received answers assumed a supervisory position of a professional member of the managerial team. The member was either a manager or a supervisor in charge of either the program or the process of post-cochlear implantation of more than 70 users in the United States and English-speaking provinces of Canada combined.

Data Collection

The actual total enrollment was different from projected enrollment because the minimum number for SurveyMonkey was 50. Still, through the primer open weblink to partners, I received three valuable responses in 2020 from partners' members. A relaunch for the targeted audience of audiologists per SurveyMonkey in the U.S. healthcare industry to hard-of-hearing and CI organizations generated four valid responses that I

received. Additionally, from a launch of a minimum of 50 requests or surveys in the Canadian healthcare industry or healthcare organizations targeting the same audience, I received nine good responses. One respondent surpassed a total number of expected reactions of 15. I utilized SurveyMonkey for all surveys in an anonymous way, following the SurveyMonkey quality policy.

The changes in organization partners noted some declines, abstention, and death of a gatekeeper at the Australian organization. I planned Canada as an alternative to the scheduled fifth Australian unit; Australia declined following the fate of Dr. "X," my gatekeeper victim of the pandemic, at the Australian "H" organization. Canada included three units bound to the single case study with five embedded units: two in the United States and three in Canada, as per data collection. The units were assigned regionally to the location of the collected data in the same series.

The Canadian provinces of Ontario (Unit 3), British Columbia (Unit 4), and Alberta (Unit 5) were the three units of the single case study. The total number of participants was 105 from the United States and the English-speaking region of Canada. The U.S. units comprised seven participants nationwide, and the Canadian units were composed of six responders from Ontario, three from British Columbia, and one from Alberta. The number of individuals enrolled but withdrawn by me was 89. The reasons for withdrawal were that the 89 audiologists never supervised CI users, never traveled abroad, and neither experienced nor considered culture shock factors.

Further, participants never considered challenges in their practice for improving the quality of the PCIP. No dropouts from the survey were noted, and responders

answered all questions without skipping. I sent all surveys through SurveyMonkey.com with exclusion questions targeting audiences in the healthcare industries or health organizations specializing in cochlear implantation and follow-up programs. The relationship with organization partners did not change since IRB review. No conflict-of-interest disclosure under Walden policy on conflict of interest was required.

There was a relaunch of data collection from the U.S. expert partner through SurveyMonkey.com on May 9, 2020. I initiated the second collection via LinkedIn to a U.S. partner through SurveyMonkey.com. I started targeting healthcare managers and professional practitioners on February 6, 2021, for both the U.S. health organizations and Canada through SurveyMonkey.com. The preparation of document copies for participant member checking was not allowed by SurveyMonkey policy that applied anonymity to all participants. I collected primary data using surveys and literature reviews (Alam, 2021; Moser & Korstjens, 2016).

The research skills and interpretation aimed to capture the optimal sense of understanding of responses to the questionnaire guide. The research then sustained the reliability or, precisely, trustworthiness and authenticity (Nowell et al., 2017). The open-ended question guide followed the consent form, including concerns preceding the questionnaire guide for answering questions as a sign of agreement. Limiting the number of characters to accompany the survey questionnaire implied emailing a summary or abstract with both the targeted audience and the SurveyMonkey link. However, the contact partner received my email address and phone in case of any preliminary questions.

I planned and prepared a set of questions for the questionnaire guide and checked my instrumentality by addressing my potential biases. I constructed practical key questions as included in the questionnaire guide implemented by segmenting in three sections instead of five as predicted: the transition, key, and closing questions instead of the introductory, transition, key, and closing questions, followed by my closing statement (Castillo-Montoya, 2016). The questionnaire guide contained 10 open-ended questions, indicating the purpose and the format of the questionnaire, and presenting the duration and terms of confidentiality—no face-to-face interaction was possible due to the pandemic policy and rules. I did not need a Sony digital voice recorder for the online questionnaire.

The (validity) credibility and authenticity of the data depended on the reliability or trustworthiness of the SurveyMonkey quality policy. The policy stipulated accurate targeting, as SurveyMonkey regularly refreshed panelist profiles, and users could adjust their targeting with matching and custom screeners. Bot detection signified a restriction on duplicating or fraudulent respondents on behalf of the researcher, who could then focus on analyzing insights rather than quality control. Panel calibration let survey staff run ongoing panel calibration studies to guarantee that the response quality met in-house and industry standards. Response quality outlooks responded to metadata for identifying speeding and filter or removed responders' feedback from the analysis. Survey design review signified that the machine learning models in SurveyMonkey Genius endorsed my survey layout. Assistance from market research experts was available for reviewing a survey before launch. The quality guarantee feature allowed the replacement of the

encountered poor-quality responses per request at no extra cost (www.SurveyMonkey.com).

The guarantee ensured the completion of all received responses included in the purchase to preserve data quality. However, the quality protocol above did not enable me to check for resonance with the participants' experiences to validate the report content. Yin (2018) related that case study research allows a researcher to collect data from additional literature reviews, including updated peer reviews (Moser & Korstjens, 2016). Still, I was limited to participants' responses to the opened-ended questionnaire guide. According to Clark and Ivankova (2016), the questionnaire guide or protocol comprises the survey project description and the central question that precedes the open-ended questions. The questions asked could be who, what, when, why, how, how much, what, for what is, or what results.

Data Analysis

Moser and Korstjens (2016) referred to initiating contact with participants who meet a study's criteria regarding data collection and coding. In my case, I confidentially contacted through LinkedIn electronic mail service the potential chief officers from partner organizations or department leaders of interest and informed the IRB for approval. I then emailed a recruitment letter and consent form package with a survey link to the questionnaire guide to leaders of a site organization or gatekeepers to be forwarded to a pool of managers and their team members.

Activities in the healthcare industries and health organizations were affected by the pandemic. A change of plan was to rely on an emailing process and

SurveyMonkey.com to reach out to participants and groups of interest. The consent form became unnecessary, as per the applied SurveyMonkey policy of anonymity. Only the participating action confirmed the agreement, referring to the summary of the introduction to the survey for execution. No name was listed, except the IP addresses, time of collection, date, duration of the survey, genders, ages, and data collection location. Participation confirmed the agreement that translated into the obtention of informed consent from 100% of participants. I sent the SurveyMonkey.com survey link to all respondents as targeted audiences of audiologists in cochlear implantation. In the case of a phone call or email contact, Kegler et al. (2018) suggested starting the scheduled conversation with a consent form review to ensure both terminology and intent.

I informed potential participants through the survey's summary that the open-ended survey would last approximately 15 to 20 minutes. The participants might choose to extend the duration for more convenience. Oltmann (2016) suggested making the participants aware that at any time during the survey, the survey might cease at the participant's will. The primary recruitment criteria of the participants relied on their managerial or supervisory functions, such as managers and professional medical practitioners who supervised the PCIPS. Yin (2018) advised that selecting a small sample size allowed me to use a data collection method fostering open-ended questions from the standpoint of the quality research guidelines.

I imported written text or transcription from SurveyMonkey into the NVivo platform tool before analyzing thematic categorization or patterns. Morse (2020) advised

that using the coding to organize data allowed the me to find essential topics. QSR NVivo was a software application that allowed me to code themes and facilitated the analysis. The coding technique was a preferred approach to managing raw data to simplify analysis (Jackson & Bazeley, 2019). I used QSR NVivo to find the emergent categories of the topics from the open-ended survey responses, Literature, and peer review journals all through the research. I used QSR NVivo to group the coded data into topics to recognize critical themes and correlate them with the conceptual framework and Literature.

Alam (2021) stated that using this organizational technique enabled the cross-examination of data from all sources for analyzing each source individually. Respondents were managers and professional medical practitioners of the PCIPS (Andrade, 2020; Campbell et al., 2020). The selected responses were within the spectrum of the research question for the case study with embedded units. The context of the questions underscored the perception of managers and managerial team members about performance, issues, or experience of CI users in a host cultural environment abroad (Kegler et al., 2018). The methodology to execute the process consisted of theoretically identifying the labeled culture shock factors.

I performed the qualitative data analysis of the thematic description beside the study research question and evaluation. I used the time, space, and person aspects of triangulation to analyze data from multiple data sources utilized in the study and obtained diverse observations to validate the conclusions (Nowell et al., 2017). Through triangulation, I examined and compared the results of online questionnaire guide from Surveys through SurveyMonkey.com. I reviewed transcripts without the planned member

checking process. The members still face medical and professional confidentiality constraints reinforced for the pandemic policy (Mozersky et al., 2020).

However, I depended on the SurveyMonkey policy that demonstrated targeting features, duplicate prevention, or fraudulent respondents for quality control. The machine learning models of SurveyMonkey Genius supported my survey design and guaranteed quality assurance. Genius features extended to balancing and custom screeners, and internal quality response satisfaction. However, the quality protocol above as anonymous outsourcing did not permit me to check for resonance with the participants' experiences. The said experiences might allow me to validate or align the transcript's authenticity to the report content as planned. Triangulation referred to the simultaneous use of different methods and data to obtain different perspectives on a particular issue (Renz et al., 2018). These perspectives included credibility, transferability, dependability, and conformability. In this study, triangulation involved literature reviews and responses to opened-ended questions. The responses had both original and context of the data flow per unit of the five group-member of responders referring to my skills and expertise in the field.

Evidence of Trustworthiness

Credibility

I finally concluded by referring to all the above that credibility depended on the effectiveness of my diligence (Finefter-Rosenbluh, 2017; Yin, 2018). I committed as a researcher to verify the efficiency of the procedures used in the process by determining the system's effectiveness to justify the trustworthiness (Nowell et al., 2017). Thus, based

on the resulting evidence, I projected to establish the TQM model of culture shock mitigation in adult CI users in a host environment. The operational reliability and the cost of the PCIPS depended on the user's health profile (HealthPartners, 2014-17; Liu et al., 2016). Unfortunately, I could not acquire this index information from managerial team members.

I planned to use TQM for monitoring and controlling the operational reliability and TCOC delivered through the PCIPS. I illustrated the method for determining the process cost, cost of quality, TCOC with a dollar value, and the system effectiveness indicated in Chapter 5 discussion. Appendices D, E, and F carry on extended comments (Barringer, 1998). To reduce biases, I sent the questionnaire guide only to selected audiences and partner members, used standardized procedures, and avoided jargon. The questions were also kept clear with no redundancies. I used appropriate formatting as per the IRB approval. Due to the sensitivity of the survey content, I collected data through SurveyMonkey.com in total confidentiality without responders' disclosure concerns. I reduced my bias by administrating the survey anonymously using the established policy standards of SurveyMonkey.com.

Transferability

Transferability was quite challenging in qualitative research. Transferability refers to how I, a qualitative researcher, can generalize or transfer the research results to other settings (Nowell et al., 2017). Clark and Ivankova claimed that the meaning of reliability and validity within the qualitative research framework did not have the same implication in quantitative research. Researchers in the qualitative method use credibility,

trustworthiness, and authenticity instead of reliability and validity. Furthermore, I might use the term verification instead of validity to introduce qualitative research as a distinct methodological approach.

I collected data for the single case study through qualitative research approach using an email-link to questionnaire guide of 10 open-ended questions. I imported transcription from SurveyMonkey into the NVivo platform as planned in Chapter 3. Also, I planned diligently to analyze the code and interpret it with professional integrity (Moser & Korstjens, 2016). I assumed that the findings from the case studies and the respondents' views would offer a generalization to be shared and replicable with a fair degree of confidence.

Dependability

The idea of dependability underlined my entwined observations to the framework or setting of the study. Bazeley and Jackson (2019) remarked that the reliability or trustworthiness of the result depended on my skills in the method of execution and software. My researcher’s background and experience in cochlear implantation and my literature review in Chapter 2 are part of both personality and skills as the potential to learn and understand the biases (Finefter-Rosenbluh, 2017). These biases might carry out the attenuated subjective flaw on the outcome. In addressing dependability, my dissertation presents a detailed report of the design and study findings. The address should allow future investigators to duplicate the study, develop a clear insight into the methods, and gain or reproduce similar results.

Confirmability

To attain objective results and maintain the course of intrinsic research referring to, for instance, coding and researcher awareness of reflexivity, my positive and skilled subjective influence should lead to attenuate biases (Clark & Ivankova, 2016). Confirmability referred to the degree to which others could corroborate the findings of a study. In the qualitative inquiry approach, my high skills and deep understanding through theories, peer reviews, and current trends in dynamic multidisciplinary field of interest are necessary. My research attributes contributed to the understanding of the overall philosophy of culture shock mitigation and management and supported the integrity in the research knowledge. Thus, planning to successfully attain adult CI users' satisfaction in times of culture shock crisis expectedly. The findings of this study resulted from the experiences and opinions of participants whose motivation and devotion aimed to improve the quality of life of the CI users (McRackan et al., 2019). I used triangulation to address the issue of confirmability and reduce the investigation effect of bias. In this study, triangulation involved literature reviews and survey carrying out a questionnaire guide with opened-ended questions (Renz et al., 2018).

Study Results

The purpose of this single case study with multiple units was to explore CSM strategies needed among adult CI users in a host environment abroad. The population for this case study consisted of managers or supervisors of PCIP or follow-up program. The unit described managers or supervisors of the PCIP. The PCIP was a system containing

units of CI users' managers or an average group of end-users' supervisors. The feedback from participating managerial team members fostered a profile of an end-users' group.

The participants were managers and professional medical practitioners overseeing the PCIP or follow-up program for end-users. The processed data resulted from the responses to questionnaire guide, literature review, and responses analysis per every five selected units. Two units were bound to the United States regions (one from partners and another from targeted U.S. audiologists through SurveyMonkey.com). As well, three units were bound to English-speaking regions of Canada (Ontario, British Columbia, and Alberta). The following four significant themes emerged to enhance the conceptual framework (a) post-cochlear implantation process and quality (PCIP-Q), (b) culture shock and management (CS-M), (c) interactional deliverable outcomes and culture shock mitigation (IDO-CSMi), and (d) process cost and total cost of care (PC-TCOC).

Chapter 4 presents the study results to explore CSM strategies needed among adult CI users in a host environment abroad. In addition, I offer the social change perspectives for consideration. First, the quality of the management strategy aims to improve the quality of care (QoC) by mitigating the culture shock factors in adult CI users in a host environment (McRackan et al., 2019). Second, using TQM may impact human development globally through an international sustainability effort for a global positive social change initiative. The plan and execution efforts intend to convey changes throughout international philanthropy, charity, and CI manufacturers. The upcoming use of artificial intelligence to program the CI systems has a considerable influence on the worldwide provision. (Waltzman & Kelsall, 2020). Third, a social enterprise (S.E.) or a

biosocial organization aims to provide services for CI users in a culture shock crisis in a host environment abroad (Cornelissen et al., 2021).

The overarching research question was: What culture shock management strategies are needed among adult CI users in a host environment abroad? The collection of data consisted of a survey of an open-ended questionnaire guide throughout the SurveyMonkey.com link. I sent the survey link to partners' gatekeepers and targeted ear nose and throat (ENT) expert audiologists, speech pathologists, and clinical psychologists in the post-cochlear implantation program. The targeted healthcare industries were in United States regions and English-speaking provinces of Canada. The responses were from each participant. The context of the data flow was per unit and Literature reviews.

I utilized the case study questionnaire guide (see Appendix C). I analyzed the responses, context of the data flow, and the literature review using QSR NVivo research software to pinpoint emergent categories and themes. In addition, I identified the relationship and influence of the findings toward culture shock and management in the adult CI users and interactional deliverable outcomes (IDO). The outcomes mentioned above compose the conceptual framework for attenuating the dynamics of culture shock in the environment. The IDO were the expression of the CI users within and out in the host environment under the culture shock threat as stipulated by the learner’s lay theory of culture shock (Goldstein & Keller, 2015; Saylag, 2014). The category of TQM of the process (TQM-P) comprised Theme 1: Post cochlear implantation process and quality (PCIP-Q), Theme 2 portraying the culture shock and management (CS-M), and Theme 3 containing interactional deliverable outcomes and culture shock mitigation (IDO-CSMi).

The category of the process cost and total cost of care (PC-TCOC) presented a Theme 4 relating to evaluating TCOC.

Theme 1: Post-Cochlear-Implantation Process and Quality

The emergent themes underscored concerns regarding the CI users on one hand, and audiologists or therapists on the other hand about the reliability of a service-care value (Feigenbaum, 1961). The end-user's painful experience of the level of the sound discomfort compelled intensive support from managerial team members for corrective action on the failure (Percy-Smith et al. 2018). A reliable care might deliver successful expectation or process attributes in the PCIPS for the user's acculturation (Lombard, 2014; Presbitero, 2016). A quality plan including consistent testing from skilled audiologists and training is required to improve the process (HealthPartners, 2014-2017; Liu et al., 2016).

UNIT 1: "A quality process is characterized by intensive support, lifting CI users' self-esteem through volunteerism in the public service, and consistent attendance to the therapeutic and audiological session."

UNIT 2: "Avoiding travel internationally, considering normal hearing as reference for control. In addition to awareness and training for new skills among managerial team members."

UNIT 3: "The quality perspectives in PCIP carry on the ability to adjust the tone level of sound to comfort, improvement of the process and update, acculturation of the CI users in a host country and positive interaction, receiving a clear hearing, and showing satisfaction about the process outcomes."

UNIT 4: “Process quality must comply to a goal-setting in a quality plan featuring friendly carrying in subjects into a plan with prediction.”

UNIT 5: “The planning includes a running test bench where consistent testing and verification of audiological data take place.”

The participants’ responses as coded through NVivo generated 233 total mentions (N) from participants responding to open-ended questions referring to the theme of PCIP-Q overall. In addition, the respective 212 and 259 mentions were from the original non censored raw responses of the United States and Canada, as shown in Table 3.

Table 3

Post-Cochlear-Implantation Process and Quality (PCIP-Q)

Subtheme	*N*	% frequency of occurrence	U.S. raw *N*	U.S. raw %f	Canada raw *N*	Canada raw %f
Post process	68	42.58	68	35.16	81	36.58
Cochlear implant users	78	22.24	65	20.58	81	21.81
Quality	87	29.13	79	23.42	97	23.52

Note. N = Frequency of Subtheme 1 mentioned across all participants, and raw *N*: frequency of Subtheme 1 mentioned across all participants from the United States and Canada before review.

Theme 1: Post-Cochlear-Implantation Process and Quality Findings—Comparison With Literature

The units' responses aligned with the internal causes of culture shock, thus endorsing the quality of the process by focusing on the user, the device, and the managerial team members. The sources of culture shock comprised internal and external elements. The external sources showed 13% attained directly in a host environment

abroad. The internal causes, evaluated at 87%, concerned the individual personality formation or individuation. The service-care intervention aimed to alter the adult CI users' culture shock experience (Goldstein & Keller, 2015; Presbitero, 2016).

I first presented the theoretical aspects of the implant, adult CI users, and culture shock theories. Second, the investigated strategies adopted for the management of the culture shock relied on the GST of all and the following aspects (a) psychosocial aspects, (b) ethics and morality, (c) quality (d) FDA and regulations (e) cost (f) service-care, and (g) means for service-care delivery or an expert contractor such as CISORG (Cornelissen et al. 2021). Third, the presentation of the CI aimed to expose the interaction of the device at the internal interface organism-device as a closed system. And externally, as an open system through the microphone and the environment. Fourth, the FDA restricted compliance with rules and regulations for safety (FDA, 2011-2014).

Theme 1: Post-Cochlear-Implantation Process and Quality Findings—Comparison With Conceptual Framework Module

The PCIP-Q conveyed the PCIPS module (Estrada and Romero, 2016). The system drivers portrayed a systemic element that contains expertise, service socialization, prayers, and measuring user satisfaction (Sankaran, 2020). The unit also presented a deficient close collaboration between audiologists and therapists at sometimes pro bono and sign sustainability for words heard during the transition shock period (Fitzpatrick, 2017). The requirement included knowledge updates, allowing technology applications for communication and exchange programs by considering devotion for hearing and speech rehabilitation as a priority (Juran, 1988).

The unit emphasized on managing expectations and implementing an intrinsic process objectively to improve efficiency, preventing audiological flaws for attaining clear hearing outcomes to satisfy the client (Feigenbaum, 1961). The best way to manage expectations was to communicate with every user on a repeated basis. Discuss what to expect and how to complete it. In addition to measuring the achievement and agree to devote to what to deliver and when (Pomirleanu et al., 2016).

UNIT 1: “Managing the post cochlear implantation process relies on strategies that carry on possible experience for expertise, consideration of socialization and awareness to increase quality certainty, and requesting feedback from end-users about process quality and satisfaction for better service inquiry and improvement. Managing experience contains an efficient deployment of the AVT and addressing an award for delighting in user's satisfaction. The improvement of support efficiency requires counseling and access to counseling that treats end-users like normal hearing individuals to assure support with affection. The accommodation with moderation in the process as per the users’ claims aims to follow adaptation adjustments progressively. A tight collaboration Audiologist-Therapist and free services charge offer increases efficiency.”

UNIT 2: “Although few managerial team members never applied quality assurance strategy or followed CI users in the support group, a variety of strategies such as prayers, assisting with compassion and Kindness, relying on the translation of input meaning to sustain word hearing, and coordinating the transition of subjects from deaf and hard of hearing to CI users’ status. Further, considering progressive and incremental intervention per individual’s claims with listening and compassion. Allowing the

utilization of technology applications for translation, communication (TextMate), a social application to send and receive messages of compassion (Gentle), and private meditation and healing from hurt factors (Gentile), as well as using both auditory stimulation and sign language."

UNIT 3: “Strategically managing the quality process consists of planning CI users in an experience exchange program, assessing provided services and appreciating users’ declaration of satisfaction, engaging fully and consciously by refreshing oneself to remove biases, managing culture shock factors, considering both hearing clarity and volume of conversation as key values needed to enhance relationship quality, Training, education, research, and knowledge update. I enjoyed an end-user hearing the first sound from the world, delighted in the end-users first hearing experience, and resulting technology features per user's satisfaction. In addition, the devotion for hearing and speech rehabilitation benefits the relationship with an implanted family member and inspires experiencing supports of a relative's quality of life. The management strategies to improve support efficiency include applying standard procedures throughout the support program. In addition, the strategy includes implementing an intrinsic process objective rather than subjective to avoid biases. Being professional and considering openness toward adult CI users, set a quality plan for CSM in the PCIP that includes clear hearing outcomes and prevention of erroneous distraction and negligence.”

UNIT 4: “Managing expectations includes performing adult CI user follow-ups assessment, education and training, knowing and applying the tolerance of users’ acoustic

level to improve support efficiencies and increase process quality per claim by using sign language tools to ensure quality in strategies."

UNIT 5: “Have to follow standard procedures and update quality control protocols to prevent audiological flaws and include coaching for self-esteem boost and sustainability training.”

Theme 2: Culture Shock and Management

Fitzpatrick (2017) stated that CSM consisted of targeting the optimum degree of culture shock threats while mitigation generally involved reducing or eliminating the same factors. In the post-modern society equipped with complex configuration of the SoS, customizing the quality plan required to drive out factors was evident (Estrada & Romero, 2016). The claims of sensory overload and sudden loss of an acoustic signal during interaction respectively produced abrupt discomfort and reverted to preliminary deafness conditions in the users (Percy-Smith et al. 2018). The reverting situation thus provoked identity confusion and disappointment in end-users (Salehomoum, 2020).

The device's functional status consequently was an add-on to internal causes of culture shock. Subsequently, it decreased the coping capability of the CI users in dealing with external causes of the host environment (Goldstein & Keller, 2015).

UNIT 1: “Culture shock management concerns targeting the optimum degree of the culture shock threats that challenge CI users’ willingness to communicate during transition shock in host environment abroad, and the consideration of culture shock factors in the program."

UNIT 2: “Applying the mitigation skills among verbal interaction between end-users and also remediating the occurrence of CI sensory-processing disorder (SPD) or sensory overload during a conversation. The post-modern society implies integrating CI users into a smart city through the network of networks such as “Fantom," which delivers ultra-platform decentralized transactions of “Binance” (Bitcoin) and ultrafast medicine assistance with remarkably high security and accuracy.”

UNIT 3: “Culture shock management targeted a variety of damages that occurred due to a tedious exposure to culture shock. The targets are also (a) projecting and implementing a customized quality plan per CI users’ profile for personalized intervention, (b) focusing on acculturation rather than reciprocal perception feedback in the entourage, (c) social integration, and individual interest in acculturation through committed engagements of adult CI users in PCIP when traveled abroad, (d) remaining consistently courageous, keeping patience, and (e) maintaining optimism with positive attitude and expectation. The lack of the above attributes is a threat to CI users’ motivation and emotion during the post process abroad; The occurrence of a sudden loss of acoustic signal is a major threat to be considered because the CI generates an abrupt discomfort into the end-users."

UNIT 4: “Despite that few members recognize a lack of the culture shock awareness, applying risk mitigation aims to avoid, minimize, or limit the threat as part of the management per se that prevents CI users’ pessimism, which let them want to revert to deafness conditions. Furthermore, the above circumstances induce the user in the course of identity confusion. Checking the performance of the device through

audiological testing prevents a sudden loss of the speech processor filters to let all noises be heard simultaneously in an uncomfortable way."

UNIT 5: "The shocks such as culture shock and transition shock affect a normal coping capability in a host environment which fosters new language and culture. External causes of culture shock are environmental dependent."

Table 4

Culture Shock and Management (CS-M)

Subtheme	*N*	% frequency of occurrence	U.S. raw *N*	U.S. raw %f	Canada raw *N*	Canada raw %f
Culture, setting	98	31.61	110	32.41	99	29.59
Shock factors, transition shock, attributes	58	44.57	93	39.16	105	38.77
Management, strategies	79	20.11	79	22.11	108	24.91

Note. N = frequency of Subtheme 2 mentioned across all participants, and raw *N*: frequency of Subtheme 2 mentioned across all participants from the United States and Canada before review.

Table 4 indicates 235 mentions of subtheme 2 in theme 2 of Culture Shock and Management. There were 282 and 204 mentions respectively from the USA and Canada before review.

Theme 2: Culture Shock and Management Findings—Comparison With the Literature

Culture shock is the process of the psychological, behavioral, cognitive, and physiological impacts of the adjustment process (Saylag, 2014). This process also includes physical factors, as per Oberg (2009). The variables cultural knowledge-seeking, self-efficacy, openness to experience, ethnocentrism, foreign language interest, and cross-

cultural competence were the chosen parameters that expressed the 87% external and 13% external causes of the culture shock (Goldstein & Keller, 2015). Estrada and Romero (2016) proposed to assess a process as a manageable whole for the reliable quality of an integrated PSS unit (Arabi et al., 2018). The manageability of the process of PCIP embraces: (a) evaluation of user's internal causes in the PCIPs utilizing the GST to apply a holistic view of the process, following Rousseau et al. (2018); (b) using TQM as per Deming (1982) for optimizing the mitigation outcomes to sustain the coping capability, and (c) using the TCOC concepts for cost estimate referring to Liu et al. (2016) for the process feasibility and cost affordability (Health Quality Ontario, 2018).

The above steps were potentials for defining the CSM strategies needed among CI users in a host environment abroad. The system's operability described in the conceptual framework illustrates the interaction of the CI users under culture shock in a host cultural environment abroad. The systemic process potentials intend to deliver physical, physiological, and psychological interactional deliverable outcomes (Lock & Nguyen, 2018: Oberg, 2009).

Theme 2: Culture Shock and Management Findings—Comparison With Conceptual Framework Module

The factors reflected by the patient's health profile pointed to the Health Utility Index Rev.-3. Per unit. The total number of all candidates or patients in the module provided the whole equivalent CIPS output per CI user per unit for three years (HealthPartners, 2014-2017; Liu et al., 2016). The number of CI users reported for the study and supervised or followed by the PCIP management was more than 70 end-users.

A research associate at an ENT-ORL was a managerial team member who considered echoing personal culture shock experience as an evidence of awareness when traveled for the first time abroad in a host environment (Oberg, 1960; Presbitero, 2016).

Referring to Fitzpatrick (2017), the environmental dynamics portrayed culture shock factors, but some attributes appeared to affect some visitors during the euphoria. The unit deplored the perception of the white noise through the CI occurring during a visit (Percy-Smith et al., 2018). Mitchell-Innes et al. (2018) reported the need for improvement in speech recognition in challenging listening environments which convey chocks such as noise, transition, or culture shocks.

UNIT 1: “Supervised more than 20 CI users and held ENT learning experience in cochlear implantation. The considered echoing culture shock experience included skepticism, fear, sadness, nostalgia, and loss of familiarity dynamics. However, some exceptions such as interesting and informative views reflected a motivation or curiosity for learning expectedly.” “A team member in the learning experience at ENT set up has not yet included adult end-users in PCIP but experienced pediatric CI users which may be beneficial for adult users in some respects.”

UNIT 2: “Covered 34 CI users and the culture shock experience aspects presenting language disorientation and a mixt of scare and fun attitude for a non-prepared individual and a good appreciation during the euphoria.”

UNIT 3**: “**Managed an average of nine CI users. The culture shock experience carried on attitudes such as nervous, nervous and happy full of thoughts, experienced

culture shock firsthand, and great experience of self-evaluation, excited, and fine for normal.'

UNIT 4**: "**Followed up more than two CI users. The experience of the culture shock factors showed the language barrier difficulties, and white noise overwhelmingly blocking out others sounds."

UNIT 5: "followed up an average of four CI users per week. The experience of the culture shock factors was limited to an appreciation for a positive attitude to see a different world."

Theme 3: Interactional-Deliverable Outcomes and Culture Shock Mitigation

Feigenbaum (1961) advised applying mitigation to a non-preventable process. The mitigation aims to activate the coping potential of the CI user and discard the potential damage within the interaction with the host society (Fitzpatrick, 2017). Preparedness is a plan, or a legal standard procedure designed to assure social interaction and minimize damage when the culture shock occurs to motivate users' willingness to communicate in the transition shock period (Juran, 1988). Per Presbitero 's (2016) findings, preemptive training for awareness may include utilizing social media applications for communication and updates in hearing technology. In addition, an active local community at the destination and a local host mentor or a travel companion may be supportive assets.

Concerning the IDO, Unit 1 also suggested a suitable consistency of mental and performance in CI users (Kobosko et al., 2018; Lock & Nguyen, 2018). Besides, friendly assistance from the host environment or remote expert through quality in delivery to the

users' self-satisfaction are substantial. Furthermore, Lombard (2014) advanced that the users' individuation is a built-up feature. The feature above upon disability consisted of a standing factor when the accidentally sudden deaf experience occurs following the implant failure or when the hearing volume induces discomfort (Mauldin, 2014). Furthermore, the claim for the audiological test flaws affecting the process quality demands anticipation for (a) attenuating biases through risk analysis, and (b) preventing device malfunction, which produces discomfort from hearing volume discrepancy (Percy-Smith et al. 2018). Finally, Unit 3 posited revising the cost of care and implant fitting for affordability (Feigenbaum,1961).

UNIT 1: "The mitigation of culture shock aims to reduce the loss of coping capability and social interaction damage related to culture shock crisis, particularly the unpreventable. The objective is to activate CI users' willingness to communicate during transition shock with other optional backups of choice for help and assistance, persuading the public to pursue better solutions with compassion for culture shock awareness." And also, "The conversation of the hosted end-users conveys culture shock factors, which affect the quality of the therapy and individuation in the host environment. However, the mark of the previous disability remains a standing factor that requires friendly assistance, motivation, consistent attendance, and self-satisfaction."

UNIT 2: "Training and educating about therapy and audiology aim to develop an open dialog of interests with end-users in need of assistance before travel. Furthermore, implementing culture shock mitigation skills that include using social media applications such as "Funnily," which help to discover and connect with friendly local sites of interest,

and establish preemptive learning of biomedical updates in hearing technology.” In addition, “Although the lack of experience of certain managerial team members, the quality value at the process delivery depends on (a) customized transitioning of deaf and hard of hearing individuals into the new world of hearing with an implant, (b) coping difficult with both host languages and culture, and (c) reinitializing the process for a fresh start through a novel protocol or procedures.”

UNIT 3: “Reducing culture shock factors by relying on mitigation to attenuate the impact and implementing legal standards of mitigation plan that includes (a) a visit to cinema or music concert, (b) presenting opportunities for end-users familiarizing activities in the host community, or (c) a local mentor or a travel companion” in one hand. On the other hand, “In the PCIP, hearing discomfort is a common issue as well as the delivery of non-standardized interactional outcomes, which present quality flaw. checking the operating status of the prosthesis before traveling aims to anticipate against the claims of common malfunction or failure or breakdown despite the recorded claim for the high cost of care and implant fitting."

UNIT 4: “Planning a preparedness in the form of procedure or scenarios of individualized expected exposure assures social interaction and minimizes damage when the culture shock occurs. Therefore, corrective actions and preventive actions should be part of the CI users and managerial preemptive training, learning, and preparation.” In addition, “The faulty hearing volume as part of the common issues of the tone level of discomfort leading to sudden deaf experience is likely to be a risk in the quality of PCIP delivery.”

UNIT 5: "An anticipated training for all managers regarding culture shock awareness and risk mitigation will be beneficial," and finally, "The quality in the expected results after therapy is also affected because of device failure due to audiological test flaw and inaccurate assessment from the test bench."

Table 5

Interactional Deliverable Outcomes and Culture Shock Mitigation (IDO-CSMi)

Subtheme	*N*	% frequency of occurrence	U.S. raw *N*	U.S. raw %f	Canada raw *N*	Canada raw %f
Interaction, interactional outcomes, deliverable	75	23.25	62	18.78	68	17.19
Culture shock factors, transitional shock attributes	58	44.57	93	39.16	105	38.77
Mitigation, support, assimilation	91	26.11	95	27.52	114	25.10

Note. N = frequency of Subtheme 3 mentioned across all participants, and raw *N*: frequency of Subtheme 3 mentioned across all participants from the United States and Canada before review.

Theme 3: Interactional Deliverable Outcomes and Culture Shock Mitigation Findings—Comparison With Literature

Castellanos et al. (2018) presumed that the core of the process mitigation implies the IDO in the host environment for the CI users to withstand the culture shock factors (Lock & Nguyen, 2018). Applying the mitigation ought to activate the users' coping potentials through preparedness and training for cultural assimilation success. Oberg (1960) advanced that a dislocated or hosted individual in the host environment develops the following two behavior patterns (a) acting in presumption that the host, in the external conditions, assumes insufferable the situation of suffering from culture shock, (b) acting under mental stresses and physical weaknesses, frustration, and anxiety.

The patience and understanding of the sufferer could reasonably contribute to a timely healing period. Fitzpatrick found that the affective aspect of culture shock pointed to applying coping strategies, after appraisal, to deal with essentially stressful situations. Yet, a CI user's stressful condition may be higher. Lombard (2014) stated that cultural learning theory was the foundation of the behavior aspect of culture shock. The cognitive part of culture shock was grounded in social identification theory, where identity was vital for cross-cultural travelers (Lai et al., 2020; Presbitero, 2016). Throughout cross-cultural interaction, people swiftly discovered their singularity toward the world compared to their self-identity in a much broader context, leading to an anxiety-oriented change (Kietzman & Gourley, 2020).

The change might be in how they observed themselves and their self-identity. As per the cognitive aspect of culture shock, cross-cultural contact might present a double fundamental issue for end-users in a host environment abroad. First, the PCIP was already a learning phase. The additional cultural learning gave an overload in the process (Blom et al., 2017). Second, the social identification of deaf and hard of hearing who become CI users might carry on: Marginalization, less self-esteem, isolation, discrimination, irritability, anxiety, and distressed personality issues (Broderick, & Craddock, 2015; Shinde & Kurhekar, 2018). The consideration mentioned above allowed the application of the outcomes of the causes of culture shock scale (CCSS) to CI users despite their lower performance compared to normal hearing (N.H.) individuals as claimed in the student’s lay theories of culture shock (Goldstein & Keller, 2015).

Theme 3: Interactional Deliverable Outcomes and Culture Shock Mitigation Findings—Comparison With Conceptual Framework Module

The goal of culture shock mitigation consists of carrying out end-users to attain cultural assimilation in a host environment dynamic (Presbitero, 2016). The module of the host environmental dynamics requires both predicting and executing the quality of the training and successfully driving the mitigation strategy. The strategy regards overcoming both disability and environmental factors for investing in the CI users' coping capability and commitment to social integration (Lai et al., 2020). Fitzpatrick (2017) also stated that the execution of the mitigation aims to reduce or eliminate the obstacles along with the end-user's environment through preemptive training which includes free choice, speech perception skill categories, and eye contact (Goh et al., 2016; Kobosko et al., 2018).

UNIT 1: Stipulated that "The strategy for assimilation applies in the host environment, and that a trained CI user who freely chooses a combination of the cochlear prosthesis and sign language is likely to assimilate to the host successfully. Furthermore, using speech perception skill categories breaks the barriers for an engaged user with interest in social interaction."

UNIT 2: "Social integration skills aim to accommodate deaf and hard of hearing from disability to capability for hearing with cochlear prosthesis. Communicating in conversation carries out acculturation through application technology for translation, and booth camp for preparedness of CI users to cultural assimilation."

UNIT 3: “The quality of a work well done is a successful driver in cultural assimilation strategy. Pursuing sincere social interest with commitment in the host environment and learning a strategy for managing culture shock are necessary to cultural assimilation if the deemed strategy relies on social assistance approach as an investment for cultural acceptation.”

UNIT 4: “Using eye contact is strategical for cultural assimilation as well as conducting a preemptive training of adult CI users about coping expectation and process quality prediction.”

UNIT 5: Suggested that “Showing interests and getting involved for acculturation in the host environment abroad facilitate social integration.”

Theme 4: Process Cost and Total Cost of Care

Total Cost of the Process responded to Unit 3 claim about the high cost of care and implant fitting in the PCIP (HealthPartners, 2014-2017; Liu et al., 2016). There was also a common issue of hearing discomfort and delivery of non-standardized interactional outcomes presenting a quality flaw (Feigenbaum,1961). Managerial team members ought to attenuate biases before supporting by correcting and preventing culture shock factors when users journey abroad (Sciacovelli et al., 2017)—in addition, checking the operating status of the prosthesis before traveling assures anticipating against the claims of common malfunction, failure, or breakdown (Mugge et al., 2018).

Table 6

Process Cost and Total Cost of Care (PC-TCOC)

Subtheme	*N*	% frequency of occurrence	U.S. raw *N*	U.S. raw %f	Canada raw *N*	Canada raw %f
Process cost	156	83.46	77	36.49	94	34.92
Total cost, care	167	48.02	82	23.17	105	23.19

Note. *N* = frequency that each Subtheme 4 was mentioned across all participants, and raw *N*: frequency of subtheme 4 mentioned across all participants from the United States and Canada before review.

Theme 4: Process Cost and Total Cost of Care Findings—Comparison With Literature

The claim in management regarding the cost consisted of maintaining the quality of the process for satisfying the users as per conviviality concerns (FDA, 2011-2014). The cost factors covered the process as a whole but specifically the cost of care and fitting that hindered the progression of the process (HealthPartners, 2014-2017; Health Quality Ontario, 2018). The total cost of the process relied on both quality of the IDO and measurable satisfaction (Feigenbaum,1961). The identification and evaluation of quality and satisfaction intended for corrective action and preventive action of the whole process toward the IDO describing both value of the labor and joy of the user (Garrison et al., 2017; Mugge et al., 2018)

The distribution of the operating quality costs targeted different classifications keen for analysis and control purposes, among which the appraisal costs. The appraisal costs bore the expenses of keeping the therapy center level of quality through CI evolution and related procedures. The expenses involved testing, Telehealth, eHealth, and

Telemedicine outsourcing, including quality audits. The complaints from CI users or reactions to a resulting therapy outcome contributed to the failure cost (HealthPartners, 2014-2017; Health Quality Ontario, 2018). According to Feigenbaum, failure and appraisal costs trended together.

The adequate solution was the implementation of the total TQM to break the cycle of the trend and attain a preventive effort that fitted the following quality deficient targets: (a) Therapy center quality control, (b) therapy process quality, and (c) any quality information equipment and software used for quality enforcement. Financial increase to cover the above areas for preventive costs conveyed to reduce failure costs and appraisal costs concomitantly substantially. The upgrading of employees caused the reduction by using eHealth and virtual training, equipment digitalization, and therapeutic process through Telehealth, all aimed at modern and effective practice of process control (HealthPartners, 2014-2017; Health Quality Ontario, 2018). The said practices aimed at lessening activities of eradicating discrepancies in the therapeutic process and equipment failure contained in appraisal costs. The TQM consequently contributed to a substantial reduction in the cost of quality and raised the level of the quality. The process's total cost aims to illustrate an efficient development model of TQM in the biotechnology industry.

Theme 4: Perceptive Cost of Cochlear Implant Process

The FDA (2011-2014) recommended the quality and safety of the personnel, the end-users, medical and biomedical professionals, and patients and or customers. The quality cost relied on a selected factor responding to health utility index-3 (HUI-3) and the application of the dead to perfect health formula:

$u^* = 1.371 (b_1 * b_2 * b_3 * b_4 * b_5 * b_6 * b_7 * b_8) – 0.371$

where "b_n" is an attribute utility score,

and "x_n" attribute "Level" of individual health status aimed to select a factor reflected by the patient's health profile in the HUI-3 index (HealthPartners, 2014-2017).

All candidates or patients provided the process system output per patient for three years of the whole equivalent CIPS. Liu et al. (2016) reported that TCOC and total cost of care index (TCI) carried the individual reliability, referring to the health profile factor. The resource use index (RUI) fostered the whole system CIPS average reliability set value in percentage. The value depicted the average number of patients per three years for each consecutive year during the process on the one hand (Liu et al., 2016). On the other hand, the consideration of the Effectiveness (E), Availability (A), Maintainability (M), the Capability (C), and Reliability (R) aimed at expressing that:

$E = M * A * C^* R$ or $E = <100\%$ (Barringer, 1998).

The LCC referred to the acquisition of the CIPS sustainability costs at 12% discounts. The effectiveness of the system:

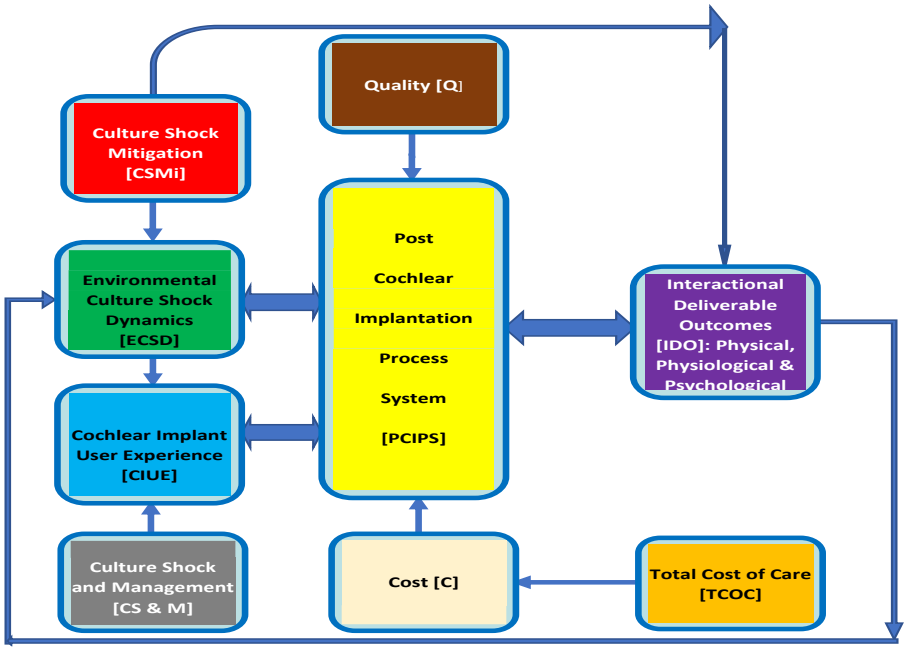
$E\_CIPS = E / LCC,$

One candidate at average care reliability valued in percent corresponded to a dislocated CI user through a CIPS effectiveness, which also was appreciated in percentage. Chapter 5 discussion and Appendices D, E, and F carry on simulations and Tables of illustrations. Figure 14 illustrates the synoptic system model of culture shock and TQM of dislocated

adult CI users abroad. The illustration resulted from conceptual framework and thematic synthesis from the single case study approach embedded Units 1, 2, 3, 4 and 5.

Figure 14

Model of Culture Shock and Total Quality Management of Dislocated Adult Cochlear Implant Users



Summary

The overarching research question was: What culture shock management strategies are needed among adult CI users in a host environment abroad? The strategy recommended overcoming both disability and environmental factors for investing in end-users' coping capability and commitment to social integration (Fitzpatric, 2017; Lai et al., 2020). PCIP and quality strategies required the reliability of a service-care value (Feigenbaum, 1961). A reliable care delivered successful expectations expressing process

attributes in the PCIPS of the user's acculturation (LaRay, 1976; Oberg, 1960; Presbitero, 2016). The management view of the culture shock concerned targeting the optimum degree of the culture shock threats to the PCIPS, which depicts an integrated implant-end-user system to deliver the IDOs instead (Masior et al. 2020).

Estrada and Romero (2016) found that in the post-modern society equipped with complex configuration of SoS customizing the quality plan is essential for driving out radical factors. The factors include internal adds-on causes of the implant failures. Goldstein and Keller (2015) stated that sustaining the coping capability in a hosted individual is essential. The CI users in a host environment deal with external causes. The end-users aspire for successful expectations through IDOs and culture shock mitigation. The mitigation aims to activate the coping potential of the CI users and discard the potential damage within the interaction with the host society (Fitzpatrick, 2017).

The preparedness in the form of a plan or a legal standard procedure (a) presents the assurance of social interaction, (b) minimizes the damage when the culture shock occurred, (c) motivates users' willingness to communicate during the transition shock period (Juran, 1988), (d) recommends suitable consistency of mental and performance in CI users to withstand culture shock factors (Lock & Nguyen, 2018), and (e) acclaims friendly assistance from the host environment or remote expert through quality delivery and users' self-satisfaction. Lombard (2014) stated that the users' individuation is a built-up feature. Unit 3 posited revising the cost of care and implant fitting for affordability (Feigenbaum,1961).

Sciacovelli et al. (2017) recommended (a) managerial team members' biases attenuation before delivering by correcting and preventing culture shock factors when end-users journey abroad, (b) Feigenbaum praised the total cost of a process of a standardized process quality free of flaws or mitigated; (c) The FDA rules and regulations conveyed the safety of a patient or recipient and the reliability of products and processes that carrying on interactional outcomes; (d) Device reliability and affordability rely on higher quality and low cost (Mitchell-Innes et al., 2018). I analyze and interpret the findings in the context of theoretical and or conceptual framework as appropriate and sign up for recommendations in chapter 5.

Chapter 5: Discussion, Conclusions, and Recommendations

The purpose of this single case study with multiple units was to explore the CSM strategies needed among adult CI users in a host environment abroad to preserve their coping capability. Managers and professional medical practitioners overseeing the PCIPS constituted the pool of obtained participants. The populations in five units were bound to the United States and English-speaking Canada (Gustafsson, 2017; Yin, 2018). This chapter contains the following main themes that emerged from the study, reflecting in two categories: (a) the category of TQM-P comprising Themes 1, 2, and 3, and (b) the category of TCOP presenting Theme 4. Theme 1 described PCIP-Q, Theme 2 portrayed CS-M, and Theme 3 depicted IDO-CSMi.

Finally, Theme 4 conveyed the evaluation of PC and TCOC (HealthPartners, 2014-2017; Liu et al., 2016). The findings of this study representing the managerial strategies needed to mitigate culture shock threats among adult CI users in a host environment abroad consisted of (a) managing expectation by predicting the quality of the process, (b) executing the drivers of the mitigation strategies in aim to overcome both standing disability and environmental factors, (c) investing in the end-users for their coping capability and commitment to social integration and positive social change, and (d) evaluating the process cost and quality for total quality management (Deming, 1982).

Interpretation of Findings

The first purpose of the study was to examine the excellence of the PCIPS-Q. The literature presented the self-identification practice and the subpersonality model that might support international individuals. The activity aimed for intervention and

management of the affective-behavioral-cognitive aspects (ABCs) of culture shock. The cognitive percept consisted of dealing with stress and anxiety by exercising the self-identification practice and guidelines. The guidelines carry on integrating the subpersonalities and then manage identity conflicts. However, the study showed the deafness disability, inter, and intra related emotional status at the CI user's social identity.

There were also phono-centrism at day, ocular-centrism at night, and conditioned spirituality as per faith coming from the hearing and hearing from the word of God (Zacharias, 2014-2017, RZIM). The elements above portrayed the basis of human social existence that required a synchronic treatment for positive social change outcomes. Additionally, the literature stressed that accepting social assimilation by temporarily getting away from native cultural tradition was necessary because an individual was not born with a culture. However, an individual was born with the capacity to learn and use the culture (Oberg, 1960). Lock and Nguyen (2018) stated that something about the nature of a cultural relationship to an individual might contain a value labeled as the interactional deliverable outcomes (IDO), including physical, psychological, and physiological aspects manifesting in a host environment (Castellanos et al., 2018).

The survey exposed the intention of avoiding travel internationally to escape damages from culture shock; however, the expressed intent corresponding to the withdrawal attitude potentially increased the inability to cope with the host culture and vulnerability to culture shock (Fitzpatrick, 2017; Oberg, 1960; Presbitero, 2016). The study showed that managers might interpret the promoted function-oriented model to highlight the CI manufacturer, the users, and continuing processes for better interaction in

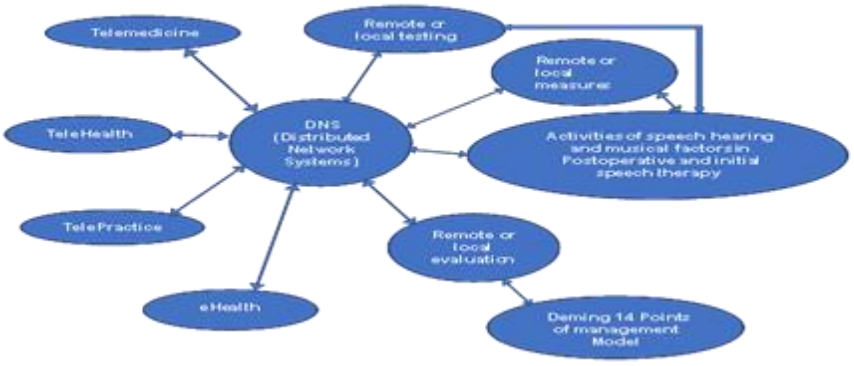
a host environment (Arabi et al., 2018). As fundamental for positive social change, all three aspects represented a bundle package product-service system (PSS) that fostered a sustainability feature (S-PSS) for a better business transaction. The literature defined telemedicine as the use of medical information exchanged from one site to another via electronic communications to improve a patient's health (Khairat et al., 2019).

Using the objective quality indicator (QI) tools for management enhanced both tool efficiency and awareness of undertaking corrective and preventive actions (Palozzi et al., 2020; Sciacovelli et al., 2017). The study indicated that managing the QIs occurred through participation in a model of quality indicators or an external comparison program such as the Deming Excellence Prize Award Program. The study presented the PCIPS outcome as deliverable by and throughout CI users in a post-implantation phase after activation. The culture shock adverse events required an investigation to identify and evaluate the aspects and influences that might deter the communication features in the host environment abroad (FDA, 2011-2014; LaRay, 1976). The literature revealed that the CIPS comprises pre-, peri-, and postoperative process components (Deep et al., 2019; Liu et al., 2016).

Regarding process quality, the study presented that the postoperative phase and speech therapeutic activity targets included audiological testing, measurement, and evaluation of hearing, speech, and musical factors conducted locally and remotely. The remote options could represent telemedicine, tele-practice, telehealth, and eHealth from headquarters, partners, and/or contractors in the distributed network systems (DNS), as indicated in Figure 15 (Zeng et al., 2015).

Figure 15

Remote Care Assistance to Cochlear Implant Users



Note. Data from Zeng et al. (2015). Distributed network systems (DNS) configuration support for Telemedicine, Telehealth, eHealth, and Telepractice.

Additionally, displaced CI user concerns might require applying the protocol recommendations for culture shock prevention (ISO 15189:2012; ISO/CD 15189.2). The estimate of the quality cost and reliability of the service-care values would occur following compliance with regulations (FDA, 2011-2014). The norm referred to Deming's 14-point management model (Deming, 1982).

The second purpose of the study was to assess culture shock and management in PCIPS. The literature presented (a) pre, pro, and post cultural assimilation, (b) success factors as individual differences, (c) personal qualities, (d) intercultural competence, and (e) intercultural communication competence as weapons of mass instruction. Sociocultural learning approaches and employer social support were parts of a cultural investment that altered individual internal values through preparation and training

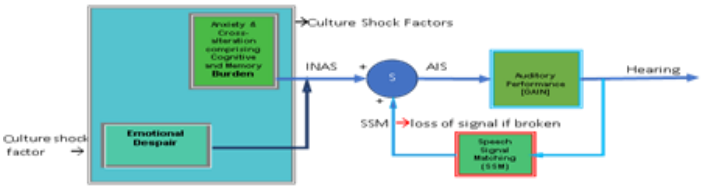
(Fitzpatrick, 2017; Presbitero, 2016). The survey responses included the claim that systemic social integration of CI users was on the menu. The smart city social integration was already impacting and influencing through formation and information about a new way of thinking, speaking, and doing.

The literature exposed the topology of the product-service systems (PSS) across the lifecycle-oriented system quality attributes (SQA) ontology that was an argumentative and no standardized concept (Estrada & Romero, 2016). The SoS was expected to attain higher capabilities and performance inconceivable with a typical system configuration. Thus, the smart city was and still is conceived based on the SoS configuration. The aim was to integrate individuals of all types, specifically those with embedded implant technology such as CIs, pacemakers, and so forth. Augmentation medicine (AM) and transhumanism artificial intelligence (TAI) promoted the portrait of augmented individuals or transhumans by sustaining the quality of health for new development and implications on transhumanism (Oudshoorn, 2020). The study revealed that the systemic combination of the CI, cochlear implantation, and PCIPSs depicted the SoS configuration (Masior et al., 2020).

Figure 16 illustrates the circumstance of speech signal matching loss (SSM). Frustration and anxiety decreased with the ability to carry on a friendly conversation to gain confidence and a feeling of power. However, the speech signal matching describes an assistive input signal designed to compensate for turbulence in an incoming normal auditory signal. The cochlear prosthesis gains access to SSM to compensate for the low auditory performance of the CI users compared to normal hearing individuals.

Figure 16

Illustration of Speech Signal Matching Loss (SSM)



Note. Figure reflects my interpretation of text by von Muenster and Baker (2014). INAS = incoming normal auditory signal; AIS = assistive input signal.

However, the quality reliability of the technology for the end-user's quality of life remains the critical element for the process system quality attributes (SQA) of learning the language and acculturating free of a sudden loss of acoustic signal (Estrada & Romero, 2016). Regarding global professionals' and their families' adjustment to culture shock, two domains and two roles appeared: The domains were "work and nonwork, and society," or "work and family life, and social life adjustments." The role fostered work role and family role adjustments (Fitzpatrick, 2017).

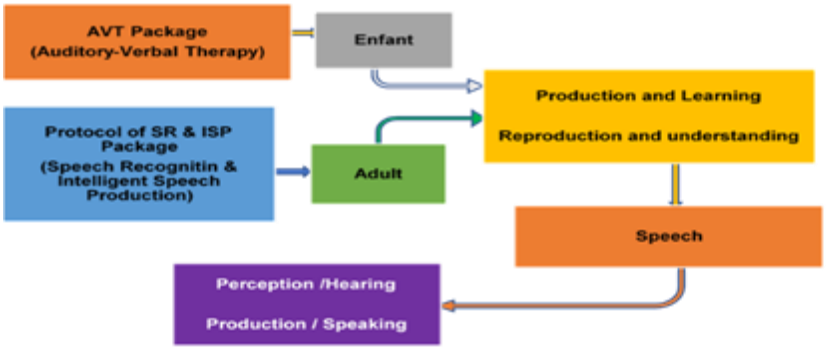
The third purpose of the study was to examine the interactional deliverable outcomes (IDO) of culture shock mitigation in the host environment. The study exposed that the 87% training and education targets should be onto individual internal values through preparation. The study revealed that culture shock factors were internal to an individual rather than external or environmental. The best cultural investment altering the training toward individuation included sociocultural learning approaches and employer social support (Goldstein & Keller, 2015). The survey responses targeted complaints,

claims, and surveys as parts of the conversation carried on benefiting from a dialogue between users and administrators or managers toward the input requirements for good leadership and success (FDA, 2011-2014).

The literature presented that cultural and linguistic fundamentals were the foundation of self-esteem activity package and social interaction practices in the postoperative phase. The fundamentals accompanied the delivery of intelligible speech that assured better communication. However, the distinctive ability to cope and adapt to harsh cultural conditions might alter built-up emotion, essential self-esteem, and self-efficacy, among other parameters (Kobosko et al., 2018; Mauldin, 2014). Concerning the quality issue, the text indicated that controlling the quality entailed detecting the quality deterioration of the caring processes to expose parameter discrepancy (LaRay, 1976; Oberg, 1960; Sciacovelli et al., 2017). Mugge et al. (2018) stipulated that the protocols may also apply to speech recognition (SR) and intelligent speech production (ISP) in adults (see Figure 17). The reflecting model of the PCIPS is shown in Figure 18.

Figure 17

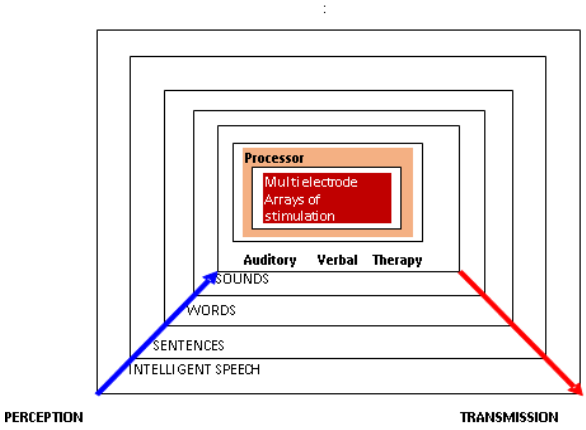
Development Quality Package of Speech Recognition and Intelligent Speech Production



Note. Illustration of primary challenges for speech recognition (SR) and intelligent speech production (ISP) of CI users at home (before travel).

Figure 18

Model of Post-Cochlear-Implantation Process System



Note. Auditory-verbal therapy (AVT) may be replaced by the protocols of speech perception and production for deaf adult post-lingual CI users.

Regarding culture shock reduction, the literature revealed that systemic causes and consequences of the problem of culture shock concerned the centrality of the social world. The social world fosters the PCIP that takes place in a host environment; the description of the centrality of the social world consists of the vitality of functioning in the social world to our survival. The social environment provides the evolutionary pressure that physiologically influences the human brain. The argument underscores that the centrality of the social world is proportionate to the abnormality of social behavior. If the centrality fosters environmental culture, a visceral rejection of that culture may unconsciously generate a dysfunctional relationship.

A flawed alliance may contain social stressors leading to an abnormality that may allow neurodevelopmental and psychiatric disorders. These disorders may foster culture shock factors, which are shocks to intra-individual or internal culture. The factors may victimize impaired individuals or group-focus CI users and create internal or intra-crisis, signifying the culture shock (Walker & McGlone, 2013). According to survey and literature sources, the preparedness to withstanding the culture shock factors was the responsibility of the managerial team members. Therefore, the managers should target successful adjustment factors weighted on acculturation for total adjustment objective (TAO) and avoid cultural transactions without intention to acculturate (CT-WITA).

The promotion of social integration to alter professionals internally intended to influence the host environment's social, economic, and political relationship to decrease the 13% of the culture shock. However, in this context, the selective nature of human evolution may exhibit contrasts as per individuals or a group at an international stage. The difference was in the physical, emotional, mental, and spiritual nature that drove one’s body, feelings, attitudes, and behavior (Fitzpatrick, 2017; Goldstein & Keller, 2015). The fourth thematic purpose of the study was to examine the total cost of care in the PCIPS. Therefore, the study emphasized determining the value of Quality Cost Dollars per Equivalent CIPS system output (Barringer, 1998).

The system output conveyed the interactional deliverable outcome (IDO) in the PCIP of the CI users. The survey revealed a reticent approach to the question regarding the inference cost. The integrity of the managerial team members and conviviality for the CI users converged in financial situations. However, the surveyed responses revealed the

silence of the majority of surveyed UNITS concerning the cost. Technically, the cumulative of the Net Present Value at 12% discount per recipient stood as unique or specific through the patient pertaining factorization (HealthPartners®, 2014-17). The factor reflected by a candidate's health profile echoed in the Health Utility Index Rev.-3. (Figure 19, 20, & 21) and (extended comments in Appendices D, E, & F).

The literature indicated that the total of candidates relatively provided the total equivalent CIPS system output per patient for three years. The rate toward maximum 100% represented the effectiveness of the process value. The rate of 1% depicted the maximum value of the CIPS system effectiveness based on the total reliability per dollar value of the lifecycle costing process or cost for total reliability of both patient and implant. Determining the value of Quality Cost Dollars per Equivalent CIPS system output per person or patient for three years is illustrated in Appendix F. As the number of patients, their AVT package, or any other elements of the process subsystems or elements of the CIPS system changed, the equivalent CIPS system output adjusted accordingly as vital indicator of the conceptual product delivery or service-care value (SCV) (Percy-Smith et al. 2018).

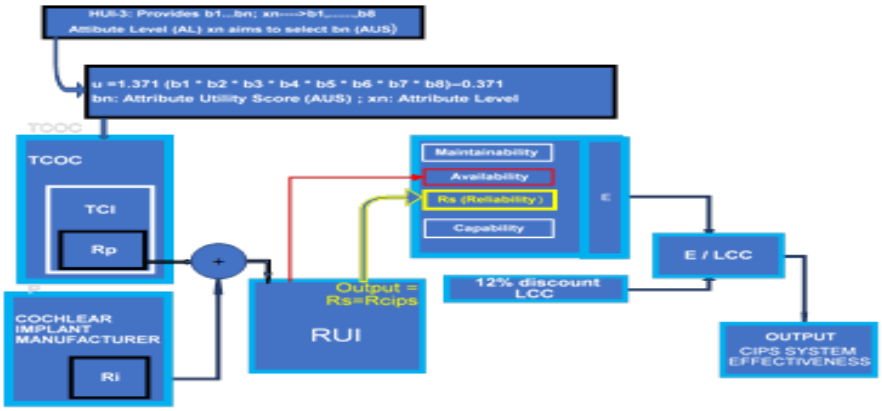
Primarily, when patients' health conditions got better, or their quality of life improved, the value of the Quality Cost Dollars per Equivalent CIPS system output decreased below the quality cost dollars per Equivalent CIPS system output spending. The output spending was the setting point of the regulation (Appendix F, format [$xx. xx]; Barringer, 1998). Then, the HUI-3 index level reflecting the dead to perfect health scale rose toward 1.00, which was the perfect health value scale (Liu et al., 2016). The

selection made was in consideration of the profiling deficiency in the hearing, speech, and emotion. The selected three sensitive references as influential parameters were culture shock dependent. The selection included the CIPS components, such as the AVT for better hearing, speech recognition and intelligent speech production (SR/ISP), and emotion outcomes are all CIPS system outputs values. To maintain the operability of the implant, Figure 22 shows the quality and cost reliability of CI acquisition. As well, Figure 21 presents the breakeven chart with cGMP (current good manufacturing practice) under FDA protocols regarding the sustaining cost summary using a Fix When Failed option (Barringer, 1998).

An algorithm for determining CIPS system effectiveness illustrated in Figure 19 may conveniently require including first, predetermining of the LCC for the CI acquisition as indicated in the simulation examples in Figure 20, and its breakeven chart Figure 21 as well as the costing trend of the total care reliability in Figure 22. The other required key parameters are reliability of the candidates, or patients and CI users in aim to determine the general care reliability based on both “health utility index revision 3” (HUI-3) and “resource use index” (RUI) for existing medical competence. The result will direct finding the appropriate effectiveness value to use for verifying the effectiveness of the CIPS ($CIPS_E$) as a ratio of the general effectiveness (E) and the LCC of cochlear implantation acquisition cost.

Figure 19

Model for Determining Cochlear Implantation Process System Effectiveness



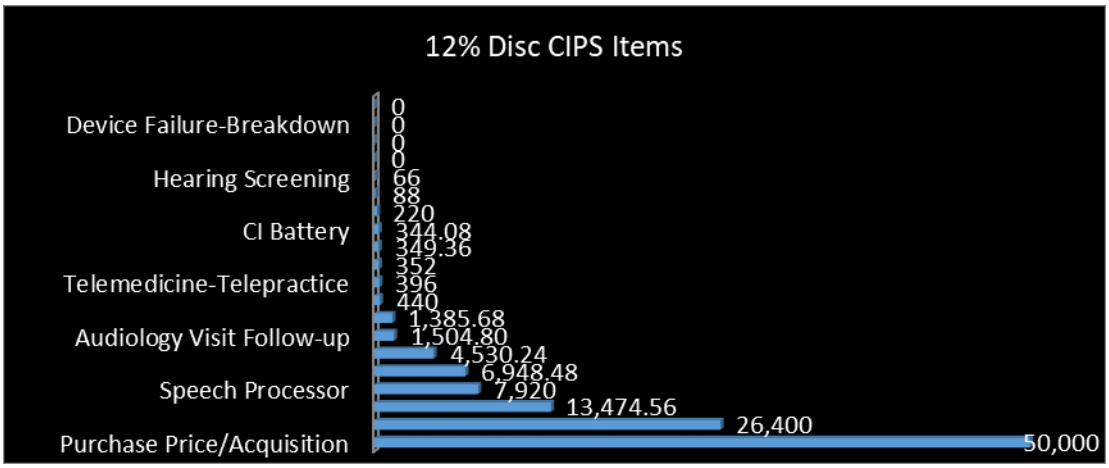
Note. I used the LCC tools and guidance set to control the cost efficiency and reliability of managing quality in a real-life situation (Data from Barringer, 1998; HealthPartners, 2014-2017).

I captured the quality of a medical device such as a CI and considered both internal or manufacturing metrics (Ri) and customer HUI-3 at "total cost of care index" (TCI) level to obtain the patient health reliability (Rp). I applied the operating quality cost of quality control management to determine the quality cost dollars per equivalent unit of the CIPS output per recipient (Feigenbaum, 1961). The quality cost relied on a selected factors responding to the HUI-3 index and applying the dead to perfect health formula (HealthPartners, 2014-2017). The consideration of the reliability pointed to using the combined reliabilities of both device (Ri) and patient (Rp) or implanted deaf CI users.

The CI manufacturer determined and tested the device's reliability (Ri). The participant care's reliability (Rp) was carried on throughout the “total cost of care” (TCOC) and TCI. TCI was a standardized reliability reference of a health caring service potentially applied and supplied to patients. The RUI provided the Availability Index Value of allocated resources of medical practitioners and their competency or potential Capability shown in Figure 19 above; the Figure 20 concerns the CI acquisition and sustaining cost.

Figure 20

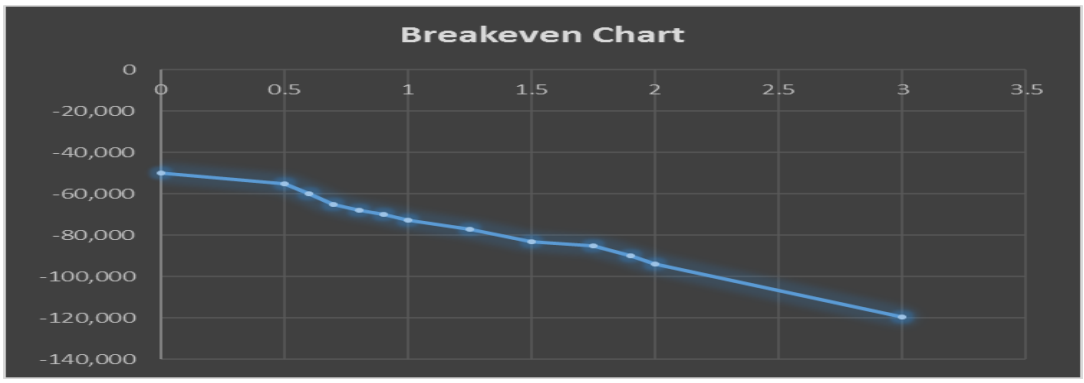
Simulated Cochlear Implantation Process System Item Acquisition and Sustaining Cost at 12% Discount Rate for 3 Years



Note. Three years of cochlear implant acquisition sustainability. Equivalent of the Pareto cost for fix when failed with cGMP under FDA protocols (Barringer, 1998).

Figure 21

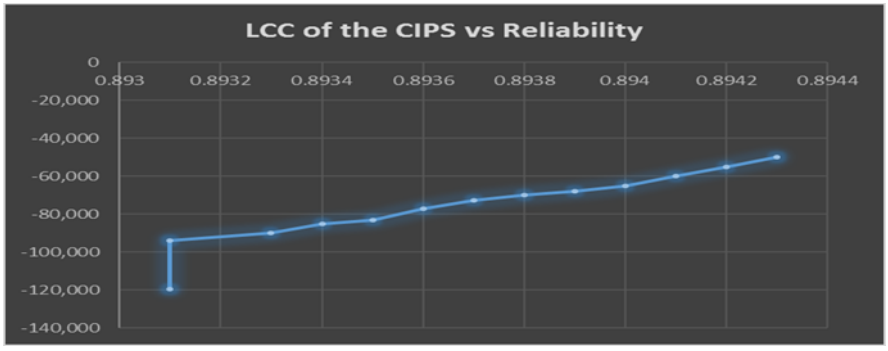
Simulated Net Present Value Using 12% Discount Rate for 3 Years



Note. The trend of break-even chart with cGMP under FDA protocols. The sustaining cost using a fix when failed with cGMP under FDA protocols, after depreciation, cash flow, net income, and discount factors, corresponding to the simulation of CI acquisition illustrating an equivalent of the Pareto cost (Barringer, 1998).

Figure 22

Simulation of Life Cycle Cost cum $PV of Cochlear Implantation Process System Versus Total Reliability



Note. Figure 22 indicates the LCC of the CIPS on the total care reliability of the selected candidates for 3 years (LCC of CIPS vs. reliability; Barringer, 1998). The total reliability

fosters the CI reliability and the reliability of the total cost of care (TCOC) during the 3 years in consideration. The reliability variation also relies on the most value of the reliability decreases in 3 years for a selected CI displayed by the manufacturer of the CI (HealthPartners, 2014-2017).

Limitations of the Study

The hearing loss for deafness was and still is considered deaf culture in the deaf community instead of disability in hearing culture (Lock & Nguyen, 2018). The pandemic and explicitly involving the healthcare industry, hospitals, clinics, health organizations, and specialized health research centers' activities of CI users presented a limitation weakness out of my control (Ross & Zaidi, 2019). The targeted participants were managers and managerial team members overseeing the PCIP program. I was also limited by assuming the responders' honesty and the sufficiency of information from responders to meet the overarching research question of the study. Yet, Yin (2018) stated that case study research allowed the researcher to collect data from additional literature reviews, including updated peer reviews (Gustafsson, 2017).

I used triangulation to address confirmability and sustain the trustworthiness and authenticity of the study results. I used an open-ended online survey through SurveyMonkey and transferred all inputs into NVivo for pattern coding. Qualitative research was appropriate for this study; yet the results obtained from qualitative studies were not generalizable to entire populations, but adult CI users who traveled abroad (Andrade, 2020). NVivo did not eliminate biases that I still have the mastering responsibility through an open process, which was a qualitative researcher dependent

(Bazeley & Jackson, 2019). The research skills and interpretation aimed to capture the optimal sense of understanding of responses to the questionnaire guide. The study's credibility relied on collected responses from the survey, which represented the opinions of the responders and potentially might represent a threat aimed at the overall credibility.

To avoid biases, the case study strategy with qualitative research approaches depended on professionalism and integrity. Due to the sensitivity of the survey content, I collected data through SurveyMonkey in total confidentiality without the responders' disclosure concerns. SurveyMonkey.com allowed reducing biases by administrating the survey anonymously through the established policy standards. The credibility and authenticity of the data depended on the reliability or trustworthiness of the SurveyMonkey quality policy.

Recommendations

For further research, the recommendations target a quantitative method of inquiry that conveys research questions and hypotheses. The basis of the methodological design is on the composites of culture shock (CS) factors and or CS theory, students' lay of CS, or theoretical CS concepts. Survey instruments keen for testing aim to establish hypotheses intended for collecting data that portrays a platform of integration for mixed method research (MMR) interpretation and confirmation.

Quantitative Approach

Through the quantitative approach of inquiry, the purpose of the survey instrument is to test end-user's performance or precisely the speech perception and production during emotional turbulence due to culture shock's physical, psychological,

and physiological dimensions (Oberg, 1960; Presbitero, 2016). The culture shock conceptual framework characterizes a CI user's cultural setting where the anticipated speech performance is ineffective as reflexively experienced by the participants. The independent variables designate an aggregate of rational prescription or constituents of a dominant environment-culture or a central world (Walker & McGlone, 2013). The dependent variables define the expected speech performance, objectivity, and logical processes in dislocated CI users in a different cultural environment (Goldstein & Keller, 2015). Moreover, the survey design intends to designate CI user's attributes or attitudes in a different cultural environment quantitatively.

It is longitudinal as a process of speech performed by a sample of non-stratified CI recipients in a defined size of a cluster. The sample size formula allows determining the sample size to find the needed number of participants for the survey. Explicitly, the quantitative inquiry using statistical sampling aims to generalize to a larger population. Thus, key variables are then independent variables (IV): Emotion, personality, unconscious impulses, rational lesson prescription or observations, and the dependent variables (DV): Objectivity, logical processes in speech, speech performance expectation. Subsequently, the formulated research questions are, to what extent do culture shock (CS) factors interfere with the adult CI user's hearing and speech expectations? Are there managerial tools to mitigate these culture shock factors among adult CI users in a culture shock environment? And the hypotheses are Ho: Null: There is no relationship between host environment and dislocated adult CI user’s hearing and speech expectation, and, for

H1: There is a relationship between the host environment and dislocated adult CI user's hearing and speech expectation.

Integration and Survey Instrument to Adult Cochlear Implant Users

The survey design aims to quantitatively describe dislocated adult CI users' attributes or attitudes in different cultural environments. It is a speech process performed by a sample of non-stratified adult CI recipients within a defined size of a cluster at a nonprofit organization under a medical professional responsibility or longitudinally targeted audiences through SurveyMonkey.com. Based on MMR, both questionnaire and survey should address the adult CI users of the same focus group directly (Here, the A.B. group) or reaching out to targeted audiences through SurveyMonkey.com with the double request at the same time: a questionnaire for a qualitative method of inquiry and the survey for quantitative approach. Every responder's feedback conveys a set of qualitative and quantitative requests.

The survey instrument relies on the outcome of the coding through NVivo following the factors and its analytical dimensions as stated in Table1, (a) Compulsive action, (b) Attitude of withdrawal or isolation, (c) Prolonged tension producing fatigue, anxiety and stress induced illness (d) Hostile and aggressive attitude, and (e) Anger and frustrations, (f) poor memory, (g) Nostalgia, and (h) pointless concern. The aim is to attest to a significant relationship between culture shock and speech performance because culture shock affects communication. Thus, the survey instrument illustrates the following questions before the independent Sample t-Test to compare independents (Physical, physiological, and psychological attributes) and dependent variables (speech

expectation performance through CI user self-evaluation in the different cultural environment). The authorization release is the critical access to adult CI users as part of the ethical concerns regulated by the FDA. The best way to access anonymously is to reach out to the adult CI users' biosocial communities through the targeted audience with SurveyMonkey.com.

The survey questions are: When located in a different cultural environment, do you persist in doing things repeatedly without reason? If so, at what intensity on the scale of 1 to 10? On a scale of 1 to 10, what is your attitude level in the different cultural environments? On a scale of 1 to 10, how tense do you feel in a different cultural setting? On a scale of 1 to 10, how much hostility, aggressiveness, anger, and frustration do you feel when coping with a different cultural environment? The related quantitative data collection will be conducted to portraying an instrument development for providing detailed information. The survey instrument conveys information such as emotion, personality, unconscious impulses, rational speech lesson prescription, and sample items signified by adult CI user’s attributes. The scale defines a continuum from 0.1 to 1 Likert-like item (0.1=very small extent, and 1= very great extent).

The execution of testing for generalization through quantitative instruments portrays the following research questions: To what extent do culture shock (CS) factors interfere with speech performance expectations in adult end-users? Are there managerial tools to mitigate these CS factors among adult end-users while in the culture shock environment? Hypotheses Ho: Null: There is no relationship between a culture shock (CS) environment and the end user's speech performance expectation. And H1: There is a

significant relationship between the culture shock environment and adult CI user's speech performance expectation. Thus, based on the resulting evidence, I may determine the reliability and cost of the PCIPS by using the TQM. The aim is to monitor and control the reliability of the total cost of care delivered through PCIPS and determine the related Dollar Value of the Cost of Quality of Care and the PCIPS Effectiveness as a system.

Implications

The resulting themes embed the perspective of social change by first recalling the societal aspect. The said aspect is a foundation of the change occurrence or the inception of its impact—the endeavor directed toward the field of interest in the biotech industry. The aim is to cover the medical device area and its derivatives, keen on positive social change through a scientific lens. The spectrum of these changes above reflects a trend based on a scientific body of knowledge and evidence. Generating the initial stage of positive changes produces direct, irreversible, and qualitative changes for development, as per Kiley and Vaisey (2020), given the parallel dynamic of the currents generations.

The successful contribution of a CI technology is substantial. The device's reliability has improved, as has the quality of life of CI users that requires sociocultural correctness and amendable technology. Thus, creating care value (CCV) or creating service value (CSV) through the named biosocial enterprise for positive social change contribute to the hearing solution in active participation. The theme aims to promote a biosocial enterprise such as the CISORG to manage adult CI users when traveling in a host environment abroad to sustain their quality of life (QOL) to normal. The QOL

occurs by or through an open system process technology defined as a CIPS throughout a service care value system at local or remote locations (Volgger et al., 2015).

The UNIT 3 asserted the claim in management regarding the cost. All other UNITS were silent. The declaration consisted of maintaining the quality of the process for satisfying the CI users as per conviviality concerns or a positive social change. The cost factors cover the process as a whole but specifically the cost of care and fitting that hinder the progression of the process. The total cost of the process relies on both quality of the IDO and the measurable satisfaction of the users by identifying their complaints and evaluating the holistic process they are going through.

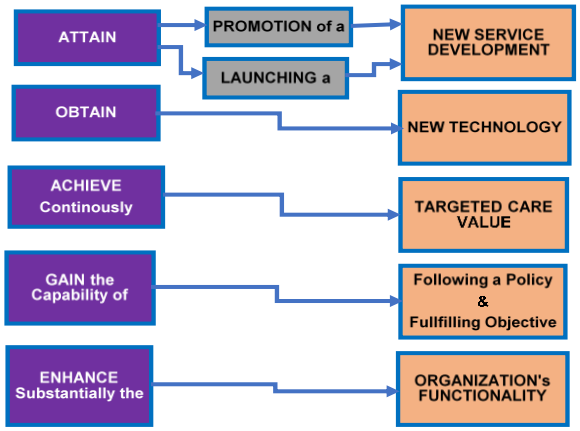
All-involved corrective action and preventive action of the entire process toward the IDO described both value of the labor and the user's satisfaction (FDA, 2011-14). The core of the total process cost still is the interactional deliverable outcomes (IDO) in the host environment that aim to withstand the culture shock factors. The primary management relies on system theories, internal psychosocial aspects, quality and reliability, and service and cost. The manageability and operability of the process are all grounded in the process quality; choosing the cost and quality rather than the cost of quality aims to apply the total quality management (TQM). The TQM should operate throughout the modern and effective process control practices (MEPCP), representing the guts of management following the model indicated in Figure 24.

The aim is to illustrate an efficient development model of total quality management in the biotechnology industry. The business biotech abides on the dynamic of FDA regulations that yield an added value to the quality and safety of the personnel,

CI users, medical and biomedical professionals, and patients or customers. Practically, the achievement of the Deming Prize Award Reference for patient satisfaction resides in using the five effects of the Deming Prize for an excellence award. If the organization is under the Deming Excellence Award Program that aims to satisfy the Deming fourteen points of the management (Deming, 1982), the new revision summarizes the Deming Prize in five effects examination targets illustrated in Figure 23.

Figure 23

Total Quality Management Evaluation Criteria



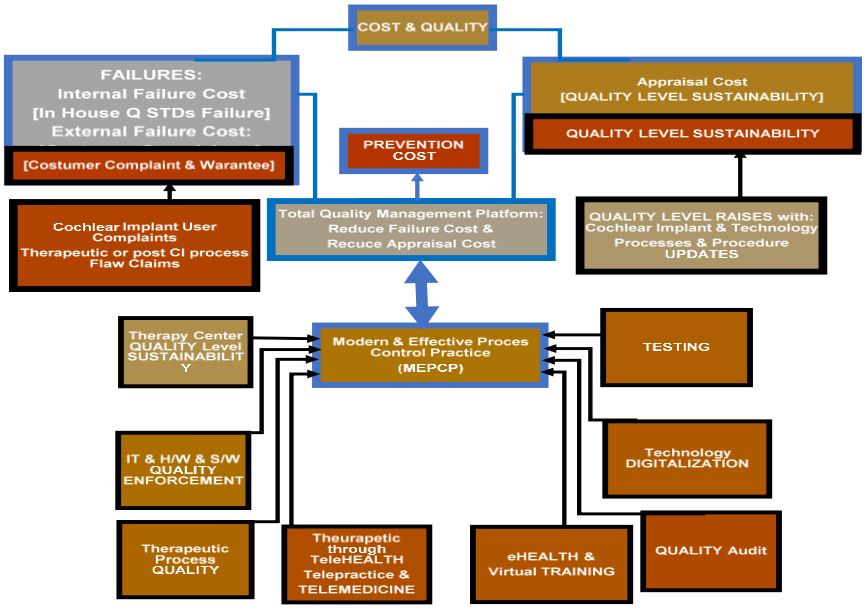
Note. From Union of Japanese Scientists and Engineers (JUSE, 2019; Deming Application Prize Criteria.)

The five effects aim at initiating and promoting a new service development through novel technology and equipment. Also, the CIPS care value of the product or process would be continuously driven and delivered through, for instance, the CIPSs. Such systems would become part of an organization in the process of the Deming Prize analysis since the capitalization of the Deming Prize conveyed the organization to portray

the capability to follow a policy and fulfill an objective. The targets indicated below were TQM evaluation criteria as mentioned in the illustration of Figure 24, from the theoretical recommendations based on Feigenbaum (1961) leading toward 14 points of management implementation (Deming, 1982).

Figure 24

Model of Assistive Management and Operation for Adult Cochlear Implant Users



Furthermore, the following steps practically embed the management to drive the mitigation, operation, and quality and cost in PCIPS to meet both the effectiveness of the PCIP system and the satisfaction of the adult CI users in culture shock crisis when traveled abroad. Steps are indicated as a whole in the Tables 7, 8 and 9.

Table 7

Assistive Management of PCIPS: Priorities and Operation

Priorities	Managing expectations and implementing an intrinsic process objectively to improve efficiency
	Writing a manifesto of devotion to hearing and speech rehabilitation as a priority
	Assure the social interaction and minimize damage when the culture shock occurs
Operation	Overseeing adult CI users in the culture shock crisis by targeting the optimum degree of the culture shock threats while the mitigation techniques reduce or eliminate the same factors in general
	Updating knowledge for all, allowing the use of technology applications for communication and exchange programs
	Preventing audiological flaws
	Necessarily considering an integrated SoS for managing adult CI users in culture shock crisis during this postmodern society
	Installing equipment with a complex configuration of the SoS to customize the quality plan required to drive out culture shock factors
	Systemically laying out drivers of the process system portraying a systemic element. The element fosters expertise, service socialization, measuring user satisfaction, and close collaboration between audiologists and therapists at pro bono
	Designing a preparedness in the form of a plan or a legal standard procedure intended

Note. Recommendations for post cochlear implantation process system

Table 8

Assistive Management of PCIPS: Mitigation Planning

Mitigation planning	Consistently considering that the internal causes, evaluated at 87%, concerned the individual personality formation or individuation. Therefore, the service-care intervention should first alter the CI users' culture shock experience (Lombard, 2014)

	Planning the awareness of culture shock threats upon individuals traveling abroad in a host environment for the first time
	Recognizing that culture shock mitigation aims to activate the CI user (87%) and discard the potential damage within the social interaction in a host environment (13%).
	Acknowledging the goal of culture shock mitigation as carrying out CI users to attain cultural assimilation in a host environment and meet the framework requirements of the study
	Executing the mitigation in aim to reducing or eliminating the obstacles along with the CI environment through preemptive training that includes free choice, speech perception skill categories, and eye contact
	Setting up prayers and sign sustaining for word hearing during transition shock period
	Hiring motivators of users' willingness to communicate in the transition shock period
	Preemptively training CI users to be aware of using social media applications for communication and updates in hearing technology
	Recommending an active hosteling community and a local host mentor or a travel companion to reduce or eliminate the cultural obstacles in their environment when traveled abroad
	Including free choice, speech perception skill categories, and eye contact abilities formation
	Calling for diligent friendly assistance from local accommodation in the environment or remote expert for quality in the delivery and users' self-satisfaction of suitable consistency for mental and performance of CI users

Note. Recommendations for post cochlear implantation process system Continued

Table 9

Assistive Management of PCIPS: Cost and Quality

Cost And Quality	Implementing a quality plan including consistent enhancement of the audiological testing and training. In addition, target internal causes of culture shock for the quality focusing on the user, device, and managerial team members

	Bearing in mind that the manageability of the process relies on the GST and the process quality for satisfying the model of behavior
	Managing adult implant user program given the following aspects of (a) psychosocial aspects, (b) ethics and morality, (c) quality, (d) FDA and regulations, (e) cost, (f) service-care, and (g) mean for service-care delivery or an expert contractor
	Considering that the social familiarizing process should foster the quality requirements that drive the management of the medical devices and patients in an integrated configuration
	Attaining an implant clear hearing outcome to satisfy the client
	Anticipating the attenuation of biases through process quality requirement for risk analysis to prevent device malfunction along with hearing volume discomfort
	Planning and executing thoroughly the revision cost of care in general and particularly the implant fitting for affordability

Note. Recommendations for post cochlear implantation process system continued

The research objective to satisfy the concern and close the gap was a driving force for exploring the CSM strategies among CI users in a host environment abroad. Thus, correcting the apparent disadvantage of the dynamic cultural issues during the post cochlear implantation process (PCIP) in the society fostering smart city features with the ultrafast SoS operability. Especially in a host environment abroad where management strategies from smart cities could necessarily attain remote assistance in a culture shock crisis.

Conclusions

In conclusion, I tested the inputs from managers and managerial team members, referring to the test of truth (Blair et al., 2018; Dunwoody, 2009). I submitted the overall inputs to the coherence of the responses and correspondence between the units or groups. The coherence criteria were (a) their background, (b) the meaning of their management, (c) the morality of their objective, and (d) the goal. The correspondence between the units revealed the conviviality or the science to the service of humankind: (a) All groups have the same managerial background; (b) The meaning of their management was leaning toward the quality of life for CI users; (c) The morality conveyed the positive social change for all; (d) And finally, the goal was typically to make CI users fulfill human potential with coping capability. Both coherence and correspondence were satisfied to stand the test of truth. Therefore, their inputs were suitable for the study and meet requirements

Finally, the managerial strategies needed to mitigate culture shock threats among adult CI users in a host environment abroad consisted of managing expectations. The aim was to strategically predict the quality of the process for successfully executing the drivers of the mitigation strategies to overcome both standing disability and environmental factors. The strategy described above conveyed investing in the end-users for their coping capability and commitment to social integration and positive interactional social exchange for all. The compatibility of smart city operation and social integration relies on management and operability of the process that were all grounded in the process quality. Optimizing the cost of a systemic quality requires total quality management

(TQM) to satisfy the smart city's systematic structure. The TQM contributes to a substantial reduction of the cost of quality and, consequently, the PCIPS's cost to raise the quality for a positive interactional social exchange of the adult CI users in culture shock crisis.

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Appendix A: National Institutes of Health Extramural Research Certificate

Certificate of Completion

The National Institutes of Health (NIH) Office of Extramural Research certifies that **Victor Ambila** successfully completed the NIH Web-based training course "Protecting Human Research Participants".

Date of completion: 12/16/2014

Certification Number: 1634010

Appendix B: Recruitment Letter for Study Participants

February 03, 2020

Re: A Doctoral Study of Potential Interest
Dear Managers and Managerial Team Members

My Name is Victor Ambila, and I am currently a graduate student a Walden University at the school of Management and technology pursuing a doctoral degree in Management with interests in Biomedical Engineering Management specialization. I am researching emerging culture shock threats. My study is entitled: "Exploring Quality Management Strategies to Mitigate Culture Shock among Cochlear Implant Users. In other words, exploring management strategies to prevent post cochlear implantation process breaches producing a loss of quality in a host environment abroad.

I am seeking to include directors, managers, and professional medical practitioner supervisors at Otorhinolaryngology (ORL) fostering one or most of the following departments: Cochlear implant users, biosocial community of cochlear implant users and involved language pathologists, clinical psychologists, and audiologists.

___ Managers of Otorhinolaryngology (ORL). Working on_____
___ Doctor or medical practitioner supervisors at ORL. Working on_____
___ Audiologist supervisor, or manager at audiology. Working on_____
___ Registered nurse supervisor at Otolaryngology office. Working on_____
___ Language pathologist specialist supervisor. Working on_____
___ Employed in a full-time management position with a minimum of 1-year experience working with successful management strategies at a focus club of deaf and hard of hearing cochlear implant users_____
___ Working directly with the implementation of management strategy to prevent any environmental phenomena that threat the development of language and culture.

The participant, 18 years old and up before retirement, who chooses to become involved in the study will do so by providing written responses to online questions accessible via the link at the end of the attached consent form. I will share the study findings with the participants, other scholars, and senior leaders of organizations. I will categorize all responses and will not attach any name to any form of the results through masking for confidentiality.

I adhere to the confidentiality measures for the study and invite individuals who have questions about the study to contact me at xxx-xxx-xxxx or across email at student@waldenu.edu. If you are interested in participating, please read the attached consent form, which contains more information about the study. Participation in this study is obviously voluntary.

Thank you for your time and consideration
Sincerely,
Victor Ambila

Appendix C: Questionnaire Guide

Type of Questions	Explanation of the Type of Questions	Survey Questions
Introductory Questions	Neutral questions that are eliciting general information	**Demographic information:** (a) How long have you worked with individuals with cochlear implants? → (b) How many cochlear implant users do you follow up in the post implantation phase? → (c) What was your experience when you traveled abroad for the first time? → (d) What was the longest stay abroad? → **Research Question**: What culture shock management strategies are needed among cochlear implant users in a host environment abroad?
Transition Questions	Questions linking the introductory to key questions	**Rapport building phase of the questionnaire:** (1) Can you share with me one of your best experiences in managing and supporting individuals that have received post cochlea implant support? → (2) Tell me about what your most successful cultural assimilation strategy was? → (3) What made this strategy so successful? →
Key Questions	Questions mostly related to the research question and purpose of the study	**Questions addressing the Cultural Shock Management Process** (4) Could you share what you feel a quality process would look like for post cochlear implementation process? → (5) What are some common issues that might be experienced in delivering a quality post cochlear implantation process? → (6) What strategies do you use to improve your efficiencies in supporting post cochlear implantation process? →

		(7) What are some of the challenges you have encountered when responding to culture shock as a threat to post cochlear implantation process among cochlear implant users in a host environment abroad? → (8) How did you ensure quality in your strategies? →
Closing Questions	Questions to ease the closing and conclude the conversation	(9) Can you share any additional ways to deal with reducing culture shock for those you serve? → (10) What words come to mind when you think of culture shock of cochlear implant users hosted abroad? →
Researcher's Closing statement	Closing the conversation by expressing gratitude.	Thank you for participating and please stay connected for follow-up. I will reply to your answers for member checking that will take 15 minutes. It consists of a process to assure the consistency of my understanding of your answers. I very much appreciate your time and willingness to help for the study. Best regards.

Appendix D: Determining the Recipient Health Utility Scores

	Recipient Utility Score	Dead-to-Perfect Health Scale FORMULA:
	u	$u = 1.371 (b_1 * b_2 * b_3 * b_4 * b_5 * b_6 * b_7 * b_8) – 0.371$ b_n: Attribute Utility Score x_n: Attribute Level u: the utility of a chronic health state on a scale where dead has a utility of 0.00, and healthy has a utility of 1.00
Candidate 1	0.x0	
Candidate i	0.0i	
Candidate n	0.0n	
Candidate 70	0.0x	

Note. From Figure 19, the table presents the formula of Dead-to-Perfect Health Scale to introducing the table in Appendix E that shows an illustration of the utility scores of the CI Recipients (Liu et al., 2016). The consideration of the CIPS system's total reliability and its lifecycle costing (LCC) convey to determine CIPS system effectiveness as the ratio of the cost-effectiveness and the LCC (Barringer, 1998). The endeavor describes how to determination all Reliability and Availability related to cochlear implantation process system (CIPS) delivery to all candidates. Hence, following their profiles reflecting the health utility index-3 (Liu et al., 2016). Appendix E illustrates a formulated effectiveness of the systems as referred to the member count:

(a) The member count expressed in the study is 70 adult cochlear implant users; (b) The effective count of the members influences the net present value and the quality value as well; (c) The corresponding quality cost, reliability; And (d) system effectiveness will certainly change accordingly. The Quality Cost Dollars per Equivalent CIPS output (Feigenbaum, 1961) decrease when the member count increases and when a CI recipient possesses an acceptable scale of deaf to perfect health value (Liu et al.,

2016). For each of the selected seventy candidates of cochlear implant, the effectiveness of the delivered CIPS corresponds to the effectiveness (E) for the lifecycle of the cost (*xxx, xxx) or Net Present Value per patient per three years (Figure 21) (Barringer, 1998).

Appendix E: Guide for Determining Cochlear Implantation Process System Effectiveness

	Plan for 1 candidate / 3years*	Plan for 10 candidates /year	Plan for 100 candidates /10 years
Maintainability (M) or stimulating test therapy per cGMP	**0.x**	**0.y**	**0.z**
Capability (C) CIPS intent to perception and production of speech	**0.x1**	**0.x2**	**0.x3**
Availability (A) or Resources Use Index or Resource relocation efficiency	**0.x4**	**0.x5**	
Reliability (R) or Care validity or Care without failure	**0.x6**	**0.x7**	**0.x8**
Effectiveness (E)	**0.xxa**	**0.xxb**	**0.xxc**
LCC	***xxx, xxx: [100%]**	**x, xxx, xxx**	**xx, xxx, xxx**
CIPS effectiveness	**0.0x = x%**		

Note. This table practically fosters the resulting data of the process effectiveness (E) determination and the system CIPS effectiveness for the three-year plan*. The plan set for the demonstrating pool was based on HUI-3 index profiles of the end-users to receive the device. Hereafter, the consideration of the effectiveness (E), the availability (A), the Maintainability (M), the capability (C), and the reliability (R) aim at expressing that: E = M * A * C* R or E =<100% as shown in this table (Barringer, 1998). Maintainability is enforced in medical practice and guided by current good manufacturing practices (in pharmacy) or current good medical practices or good laboratory practices (GLP) in the health care (HealthPartners®, 2014-17, TCI).

Thus, determining the LCC refers to the acquisition and the cochlear implantation process systems (CIPS) sustainability costs at 12% discounts as illustrated in the simulation (Figure 20). For each of the selected 70 candidate recipients of cochlear implant, the effectiveness of delivered CIPS corresponds to the effectiveness (E) for an LCC of dollars amounts called the Net Present Value per patient for three years

(Barringer, 1998). The effectiveness of the system (CIPS) depends on measuring the effectiveness and the life cycle cost (LCC) or the ratio of the Effectiveness / LCC = $CIPS_E$ or *system effectiveness* as based on total care reliability of both patient and the implant. Considering one candidate cochlear implant (CI) user, the system CIPS effectiveness is rated toward a maximum of 1%.

Appendix F: Determining the Quality Cost Dollars per Equivalent Cochlear Implantation Process System Output (QC$ECO) and Presentation of the Quality Cost Dollars Value per Equivalent Cochlear Implantation Process System Output

	NPV of CIPS per recipient for 3 years	Recipient Factors (F)	F * CIPS output for 3years	Equivalent CIPS output / patient for 3 years
Candidate 1	**xxx, xx1**	**0.x0**	**x0% * xxx, xx1**	**xx, xx1**
Candidate i	**xxx.xxi**	**0.0i**	**i% * xxx.xxi**	**xx.xxi**
Candidate n	**xxx.xxn**	**0.0n**	**n% * xxx.xxn**	**xx.xxn**
Candidate 70	**xxx, xxx**	**0.0x**	**x% * xxx, xxx**	**xx, xxx**
Total Equivalent CIPS output/patient for three years				**xx, xxa**
Total quality cost dollars for three years				**$xxx, xxb**
Quality Cost dollars per Equivalent CIPS output [Output spending=setting point of regulation]				**$xxx, xxb / xx, xxa = $xx. xx**

Note. This table and the table in Appendix E show the determination of the quality cost dollars per equivalent CIPS system output and CIPS system effectiveness calculation per patient for three years (Barringer, 1998). The customized QC$ECO through selected candidate recipients of cochlear implants (Appendix D) refers to the world health organization (WHO), Health utility index revision 3 (HUI-3) formula of death to perfect health (Liu et al., 2016). The selection was made considering deficiency in the hearing, speech, and emotion, the three referential sensitive parameters aligning with culture shock factors and the CIPS elements.

Quality Cost Dollars Value per Equivalent CIPS output

In Appendix F, the determination of the Quality Cost Dollars per Equivalent CIPS output was made per unit or patient for three years. White, Brennan-Jones, Rush, and

Law (2014) presented that when the number of patients or their AVT or other elements of process subsystems or compounds of the CIPS changes, the equivalent CIPS also changes as a vital indicator of the process delivery or service-care value (HealthPartners®, 2014-17, TCI). Typically, when patients' health conditions get better, or their quality of life improves, the Quality Cost Dollars per Equivalent CIPS output decreases its value below the quality cost dollars per Equivalent CIPS output ($xx. xx) spending, the set of the regulation (Appendix F). Then, the HUI-3 index level reflecting the dead to perfect health scale rises toward 1.00, which is the perfect health value scale (Liu et al., 2016).

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A Fully-Implantable Cochlear Implant SoC With Piezoelectric Middle-Ear Sensor and Arbitrary Waveform Neural Stimulation
Author:
Marcus Yip
Publication:
IEEE Journal of Solid-State Circuits
Publisher:
IEEE
Date:
Jan. 2015
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Towards a Closed-Loop Cochlear Implant System: Application of Embedded

Monitoring of Peripheral and Central Neural Activity
Author: Marcus Myles Mc Laughlin; Thomas Lu; Andrew Dimitrijevic; Fan-Gang Zeng
Publication: IEEE Transactions on Neural Systems and Rehabilitation Engineering
Publisher: IEEE
Date: July. 2012

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Appendix J: Extra Definition Extension List

Air-conducted pure-tone thresholds, an average of air-conduction thresholds at 500, 1000, and 2000 Hz; calculated for each ear what is PTA (pure-tone average) used for summarizing the degree of hearing loss (Chan et al., 2018).

Auditory impedance, the mobility characteristics of the tympanic membrane to evaluate the functional condition of the middle ear (Chan et al., 2018).

Autoregressive integrated moving average (ARIMA) is a statistical analysis model that uses time-series data to understand better the data set or predict future trends (Saillot, 2015).

Bayesian updating process, an attempt is made to use available information to reduce the uncertainty present in the decision-making process. Or uses data to alter the understanding of the probability of each of the possible hypotheses (Samaras, & Samaras, 2016).

Bounded rationality, model that portrays sufficiency and satisfaction in the decision-making capability (Yin, 2018).

Break-Even Chart, a graphical representation between cost, volume, and profits (Barringer, 1998).

Cochlear Implant User Status, Typical quality of life (Liu et al., 2016).

Closed-set phoneme, one of the units of sound that distinguish function words and syntactic rules from the others in a particular language (Büchner et al., 2017).

Cost-plus pricing method, cost-plus pricing is a cost-based method for setting the prices of goods and services (HealthPartners®, 2014-17).

Code of Federal Regulations, the Code of Federal Regulations is the official subject matter order, compilation of the Federal regulations of general applicability and legal effect currently in force (FDA, 2011-14).

Cost Dollars per Equivalent CIPS: total costs of a divided number of units Cost per equivalent unit. (Barringer, 1998).

Cost of poor quality generated as a result of producing defective material. This cost includes the cost involved in fulfilling the gap between the desired and actual product or service quality (Garrison et al., 2017).

Current good manufacturing practices (cGMP), a mandatory Guideline for using up-to-date technologies and systems to comply with the regulation (Sciacovelli et al., 2017).

Ethnocentrism, evaluation of other cultures according to preconceptions originating in the standards and customs of one's own culture (Goldstein & Keller, 2015).

Extended producer responsibility (EPR), an environmental policy methodology in which a producer's physical and or financial obligation for a product is extended to the post-consumer stage of the product’s lifecycle (Finke et al., 2016).

Hair cells, sensory receptors of both the auditory system and the vestibular system in the ears (Peixoto et al., 2014; Deep et al., 2019)

Health-related quality of life (HR-QOL or (HRQL)) is a multi-dimensional concept that includes physical, mental, emotional, and social functioning domains. It goes beyond direct measures of population health, life expectancy, and causes of death and focuses on the impact health status has on quality of life (Liu et al., 2016).

Health utility index revision 3 (HUI-3): Rating scale used to measure general health status and health-related quality of life (HealthPartners®, 2014-17).

Homeostasis tends toward a relatively stable equilibrium between interdependent elements, especially as maintained by physiological processes (Walker & McGlone, 2013).

Hybridizing, mixing different categories of organization or industries and thus producing hybrids crossbreeding organization (Wolf & Mair 2019).

Lifecycle cost (LCC), the sum of all recurring and one-time (non-recurring) costs over the entire life span or a specified period of a good, service, structure, or system (Barringer, 1998).

National health service (NHS), an England national health service and social care

Neurodevelopmental disorders, intellectual disability, formerly known as "mental retardation," is a disorder with onset during the developmental period (Mancini et al., 2016).

Net Present Value, the value of all future cash flows (positive and negative) over the entire life of an investment discounted to the present (Barringer, 1998).

Open-set sentence recognition, neurological speech understanding without reading the visual clues (Büchner et al., 2017).

Physiological reactivation, the reestablishment of the previous physiological impairments (Mauldin, 2014).