

Medical Transcriptionist's Experience with Speech Recognition Technology

Full Paper

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Abstract

The medical transcription industry is rapidly evolving in terms of services and revenues for the last decade. This ITES contributed the largest employment growth rate in IT-BPO in 2013. The success of this industry was assisted by recent technology like Speech Recognition Technology (SRT). Because such technologies depend on people, there is a need to study on the experiences of the people behind those achievements. This paper addresses this gap by exploring Medical Transcriptionist's (MTs) experiences using SRT. Findings revealed at least five themes prevalent to the experiences of MTs including audio file classification, valuable characteristics, negative observations, technostress coping, and highest quality orientation. This paper suggests that by looking at the experiences of MTs, current and future employers can gain insights in improving and enriching these outsourcing services. Furthermore, the presence of common themes indicates the possibility of performing a grounded theory based on substantive area of medical transcription.

Keywords: speech recognition technology, voice recognition technology, medical transcriptionist, thematic analysis

1 INTRODUCTION

Medical Transcription is an Information Technology-Enabled Services (ITES) industry classified as high value service (Benner 2006; Kshetri and Dholakia 2011). ITES includes Business Process Outsourcing (BPO) in which business processes are delegated or outsourced to an external provider maximizing the advancement of information technology along the process or in completing the given task. This high value ITES involves the process of transcribing medical dictations verbalized by medical professionals into electronic text format that is highly significant in the establishment of patient electronic medical record (Toit et al. 2015). This industry is rapidly evolving in terms of services and revenues for the last decade. The global medical transcription services market was valued at \$41.4 billion in 2012 and expected to reach an estimated value of \$276.79 billion in 2021 (Transparency Market Research 2015). Recently, medical transcription had an intense transformation based on technology, service delivery and scope of healthcare services rendered. From traditional medical transcription, it evolved now to speech recognition editor, quality assurance specialist, scribe, data capture and all the other aspects of healthcare information management, including clinical management, revenue cycle management, pharmacy benefits management, electronic medical records, medical claims, patient education, insurance processing, and quality assurance (AHDI 2016). In addition, MT is a very complex work that requires proper education or intensive training which is not customary in low-value service in the IT-BPO (Kshetri and Dholakia 2011). Furthermore, the use of Speech Recognition Technology (SRT) or Voice Recognition Technology (VRT) in medical transcription has been presented since early 1980's (Basma et al. 2011). This technology has already been adopted as an alternative to conventional manual transcription for reducing the turnaround time that resulted to cost saving, but had been observed to have a high error rate compared with manual transcription (Johnson et al. 2014; David et al. 2014). The adoption of such evolving technologies in the BPO industry as well as the function of MT and its impact economically was a significant undertaking in the conduct of research (Yin 2010).

Patient medical records are a vital component of any healthcare system. It serves as the cornerstones that tie together all the distinct functions that transpire within the healthcare industry (David et al. 2014). Ahead from the evident function for patient treatment, medical records are also integrated in billing, coding, reimbursement, audit, legal disputes and inquiries, medical research, amongst others (Johnson et al. 2014; David et al. 2014). This particular increase in medical documentation burdens becomes a major challenge for care providers on how to generate records speedily and inexpensively thus maintaining the accuracy and quality of the report. SRT/VRT presents interesting features that would address the necessity in medical reporting. SRT/VRT is a software application that automatically converts audio recordings into digital text words data (Johnson et al. 2014; Toit et al. 2015). Some studies showed that some healthcare providers adopted SRT because it helped production time of the report which resulted to cost savings (Basma et al. 2011; Singh and Pal 2011). Furthermore, some studies also reveal that SRT had improved from an immature technology reducing the unacceptable margin of errors in the report (Hodgson et al. 2015). However, many studies exposed that the use of SRT generated high error rate in the medical report which resulted to require thorough proofreading and editing, resulting in user frustration and disappointment, and an increase in overall reporting costs when editing time is combined (Toit et al. 2015; David et al. 2014; Hodgson et al. 2015; Basma et al. 2011; Chang et al. 2010).

While the medical transcription industry continues to evolve, there were, however, only few studies conducted exploring the concerns and experiences of medical transcriptionists particularly with the use of SRT. Most of these prior researches were quantitative in approach and focused primarily on the comparison of errors between the conventional transcription over the recent technology adopted in the process of transcription rather than the involvements of the MTs themselves and their work experiences toward the technology. An example of this was a study comparison of SRT and manual transcription in breast imaging report which revealed that greater part of the major error was generated by the SRT compared to manual transcription (Basma et al. 2011). Another study argued that document editing time increased using SRT compared to traditional transcription, and SRT accuracy on reports did not totally eliminate errors along the years but only reduced it with .03% per year (Hodgson et al. 2015). A different study asserted on the degree of outsourceability of high-value services like medical transcription and its cost-saving potential (Kshetri and Dholakia 2011; David et al. 2014). Additionally, another study was conducted in the process of medical record creation using SRT and subsequent editing by MTs, demonstrated the professional knowledge involved in the work of medical transcription, which included a combination of skilled worksite practices and an orientation towards the social order properties of recorded dictation (David et al. 2009). We can therefore argue that a study exploring the experiences of MT towards the use of speech recognition technology was significant. By discovering the area of

investigation and allowing the participants reveal their concerns through qualitative inquiry, we can argue that major themes on the experiences of MT on SRT would be exposed.

The purpose of this study was therefore to explore the experiences of medical transcriptionists by identifying themes that best describe the nature of their work using speech recognition technology. As disclosed, that best discovery of phenomenon is from the perspective of those participants involved in it (Glaser 1998). The succeeding sections discuss the research design, setting and participants. Data collection, analysis, and results and discussion were presented detailing a subsection for every theme. Finally, the conclusion and recommendations were exhibited in the remaining parts of the paper.

2 RESEARCH DESIGN

The study utilized qualitative approach applying the thematic analysis method to discover and analyze the patterns that would arise from the qualitative data of the participants. Thematic analysis is a 'flexible' research tool that can present substantive, detail, yet with complex interpretation of data (Braun and Clarke 2006). It is perceived by highlighting the area of exploration and formulating research question. The study initiated by formulating a general guiding question to discover the underlying behavioral patterns rather than specific questions formulated from the literature review (Ng and Hase 2008). The guiding general questions commenced like *"What are the concerns of medical transcriptionists in the use of SRT and how do they resolve these concerns?"* In this process, the study is exposing for issues and significant information relevant to the experiences of MTs towards the use of SRT without the restraints of predetermined thoughts from existing literatures (Glaser 1998).

2.1 Research Setting and Sample Participants

The Philippines is a mature location of IT-BPO industry (BPAP et al. 2015; Everest 2012). The government has primarily focused on the five types of ITES that includes voice BPO (call centers), software development, back office, animation, and medical transcription (healthcare BPO) (Lee et al. 2014). These were mainly "verticals" or sectors which information communication technology (ICT) has been applied to (Kshetri and Dholakia 2011). The country emerged as the number one provider of voice services in IT-BPO on 2010 and second in non-voice services in the world (BPAP et al. 2015; BOI 2014). These non-voice services were comprised of complex services sectors that include Healthcare Information Management (HIM) Services that cater the medical transcription industry (BPAP et al. 2015). This ITES is characterized by a sizeable and English-talented labor group, with strong affinity to US culture, strong government support and compelling industry associations (HIMOAP 2015; BPAP et al. 2015; Lee et al. 2014).

Likewise, healthcare BPO is the fastest growing sector in the IT-BPO where it generated revenue close to 1 billion US dollars in 2013, in which medical transcription industry contributed \$423 million, or a 42.8 percentage from the total income (BPAP et al. 2015; HIMOAP 2015). These helped the country's gross domestic product (GDP) rise to 6.45% in export revenues (BOI 2014) and employed over 66,000 full-time employees (FTEs) in 2013, the largest employment growth rate in IT-BPO industry (HIMOAP 2015).

Moreover, the Philippines also possesses the third largest graduate pool annually among the global top IT-BPO service centers (Lee et al. 2014). According to HIMOAP (2015) the country's large group of medical personnel makes it an attractive destination for outsourced MT services. Furthermore, the growing demands of medical transcription industry strengthen partnerships among the stakeholders in private sector and the government (BPAP et al. 2015). Agencies of the government like Technical Education and Skills Development Authority (TESDA) are helping out by making curriculum and scholarships for medical transcription and other related courses for the healthcare BPO (TESDA 2015; HIMOAP 2015). This helped to tailor the growing need of the industry where 90% of these services come from the US, and the rest from Europe, Asia and other countries (HIMOAP 2015). The initial locations of most of these industries were located in the greater Metro Manila areas and in Cebu City, but substantial growth was also expected by the development of IT parks and establishment of Next Wave Cities (NWC) (BPAP 2010) in other parts of the country. These factors inspired us to onset our investigation in this ITES.

The participants of this study came from various Medical Transcription Service Organizations (MTSO) where mostly are situated in the Visayas region, particularly in Cebu City. Cebu City is situated on the top seven as outsourcing destination in the world and consistently made to the Tholons' Top 10, the second Philippine city next to Manila, and showed a one-step progress higher in 2017 in the ranking compared to the last years (Tholons 2016).

Sixteen medical transcriptionists were the participants of this study. The first two initial participants were team leaders of two MTSOs who have more than five years in practice as medical transcriptionist. We believed that starting from such initial data gave us copious insights that eventually gave advantage to our snowball technique in finding the subsequent respondents of the study. By way of applying constant comparison and theoretical sampling, it led us to the succeeding participants directing us to what data to collect next in the coding process (Glaser 1998).

The subsequent interviews embarked with six participants who have more than five years in practice as medical transcriptionists. We believed that such extensive experience would give us pertinent information that would describe the medical transcriptionist work. Nonetheless, we also included three participants with longer work experience and five medical transcriptionists whose service was one year in average. Out of sixteen participants, only three possessed non-medical background or profession. Eight were registered nurses, two physical therapists and three who graduated in the 2-year diploma course in medical transcription. Among the participants were predominantly females and only 25% were males. Single status was also dominant with 69% over married participants. The age of the medical transcriptionists that participated in the study ranges from 22 to 38 years old.

3 DATA COLLECTION

To collect the data, the researchers employed a snowball technique in finding the research subjects. This sampling technique took advantage of the social networks, particularly Facebook as it is the most popular social media in the Philippines (ABS-CBN 2019), to identify the initial participants. The initial participants then provided the names of the other potential research subjects in the study. There were 16 medical transcriptionists from the five healthcare BPOs that participated in the study. A face-to-face interview was conducted with the participants using a semi-structured, open-ended questions based on the experiences and concerns of medical transcriptionists in the use of speech recognition technology. The researchers used field notes to record the interview. The field notes of the interviews conducted include not only the responses of the participants but also contain observations of their non-verbal behavior during the interview. The non-verbal behaviors conducted include the observation of the activities in the workplace and examining how a participant responds and reacts to questions and ideas. The interviews and the initial coding process were conducted by one of the researchers, and it was checked and consolidated by the other researcher for consistency.

After every interview, we transcribed it straightaway and applied constant comparison of incident-to-incident to indicate a concept (Glaser 1992). Permissions from MTSOs, in written and in verbal were secured before the actual interview. Every respondent was given a consent form detailing the procedures and activities involved in their contribution of the study as part of ethical approval. The medical transcriptionists that were considered subjects of this study were given the consideration of the ethical issues that might affect them (Yin 2010). Each interview lasted for 30 to 40 minutes beginning with a brief discussion about the research project to the participant. Every interview commenced with a question – *“How long have you been working as medical transcriptionist?”* The purpose of this initial question was to make the participant comfortable in sharing his or her practices as medical transcriptionist and to give the researchers a drive to explore its experiences and concerns. It was succeeded by two guiding general questions: *“How can you describe your experience as medical transcriptionist in the use of speech recognition technology?”*, and *“What are your concerns or issues in using the technology and how do you solve it?”* As the participants were answering, supplemental questions were asked to further elucidate statements given in response to these general questions.

3.1 Data Analysis

The emerging themes were obtained through constant comparison and theoretical sampling (Glaser 1992; Urquhart et al. 2010). As a guide, we utilized the thematic analysis of data according to Braun and Clarke (2006). Transcripts and field notes were transcribed line by line to generate initial code that best described the incident. Table 1 shows the sample of the initial coding of the data. Codes were then collated based on their patterns to generate potential themes (Braun and Clarke 2006). Themes were then reviewed and abstracted to form categories (major themes) for analysis (Glaser 1998). After reviewing and defining themes, the analysis of selected extract relating to the research question and literature was transpired showcasing the participant's experiences and concerns in the use of speech recognition technology.

Transcript	Codes	Themes	Major Themes
"I use only the SRT with <i>clear voice</i> dictation."	• clear voice	Audio file Classification	Technostress Coping
"I do not use SRT on <i>English Second Language (ESL)</i> providers, like the Indian doctor practicing in the US, because their English is <i>difficult to understand</i> ."	• ESL • difficult to understand		
"I rather use manual transcription than SRT on <i>poor dictation</i> because SRT report will <i>contain errors</i> ."	• poor dictation		
"You <i>cannot rely</i> only on SRT. The output <i>contains error on spelling and grammar</i> ."	• unreliable • contains error	Negative Observations	
"The transcription process is <i>fast</i> in the SRT, and it is <i>easy to use</i> ."	• fast • easy to use	Valuable Characteristics	Highest Quality Orientation

Table 1. Example of Initial Coding of Data

4 RESULTS AND DISCUSSION

The result revealed at least 5 dominant themes depicting the experiences of medical transcriptionists in the use of SRT. These were audio file classification, valuable characteristics, negative observations, technostress coping, and highest quality orientation. Figure 1 shows the initial thematic map that demonstrated the five emerging themes.

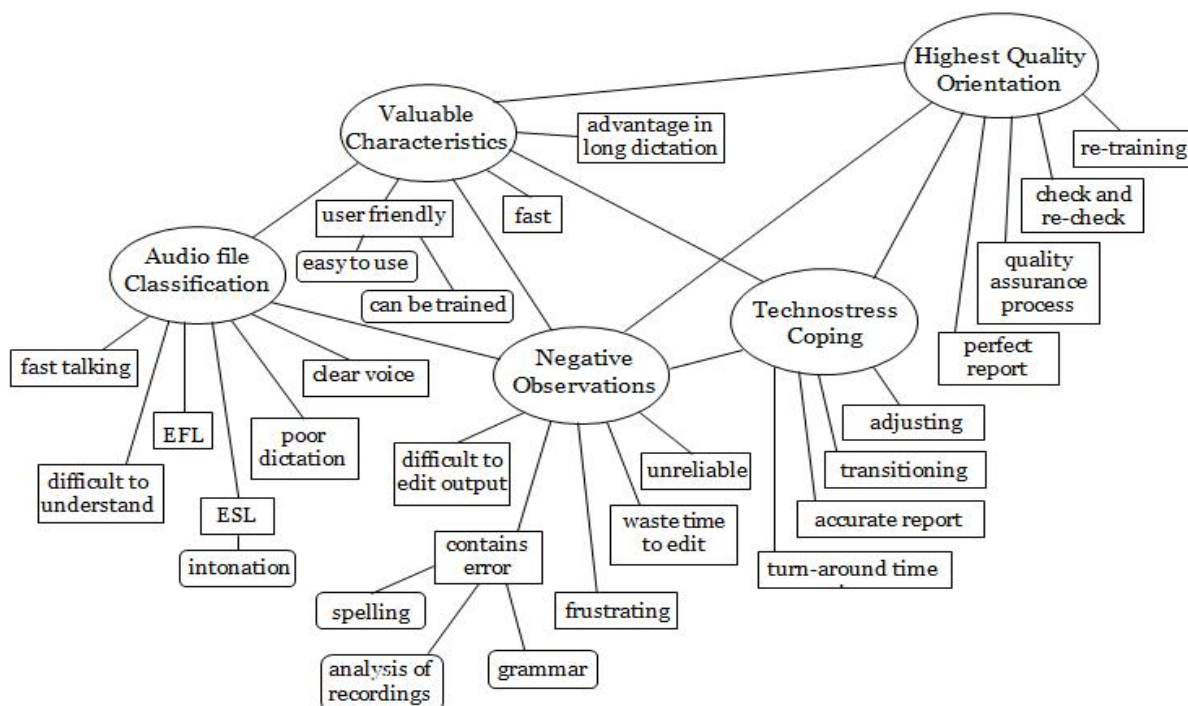


Figure 1. Thematic map showing five emergent themes

The five themes that emerged from the data about the experiences of MTs in using SRT were interrelated to each other. Beginning with the audio file classification, which was prevalent in the data, MT first evaluates the recordings if it would be beneficial to transcribe it using SRT or doing it manually. This theme contributes to the valuable characteristics theme, that depict the advantages of transcribing using the technology, and the negative observations theme which on the other hand portrays frustrations and limitations of SRT. Unreliable output, difficulty in editing output and containing errors were just among the patterns that appeared in the data for the negative observations theme. Valuable characteristics and negative observations themes were then associated to both technostress coping theme, and highest quality orientation theme. Moreover, valuable characteristics, negative observations, and technostress

coping themes supports the highest quality orientation theme portraying timeliness and accuracy of report as basis of a high-quality transcription service. These four themes formed interconnectivity relationships as the patterns of codes showed close relevance among the experiences of MTs in the use of SRT. Among these themes, the highest quality orientation premise served as the ultimate purpose of using the SRT in transcription among the medical transcriptionists. The succeeding subsections comprehensively discussed the themes that emerged in the study.

4.1 Audio File Classification

The audio file classification was prevalent in the dataset of medical transcriptionists. The process of transcription begins with the evaluation of audio file assigned to them and decides either to use the speech recognition technology in transcribing the dictation or perform it manually. This process also set forth the limitations of the SRT which is not effective in some recordings particularly those English Second Language (ESL) doctors practicing in the US. Several studies reveal that the use of SRT in medical transcription associated with higher error rates compared to manual transcription performed by the transcriptionists (Basma et al. 2011; Hodgson 2015). This was apparent among the dataset of medical transcriptionists in which they encountered difficulties on transcription using SRT. For instance, Participant 1 (P1) shared *"I do not often use SRT, I just use it with EFL providers ... I have not encountered a perfect transcription from SRT, it always contains an error..."* All of the participants shared the same experience with the use of SRT containing error on the report and having to check the output always. Statements like *"...SRT contains error on the output"* and *"...you still have to check for errors in using SRT..."* was a common testimony among the MTs that showed them the need to classify the audio file if it will be transcribed manually or by the use of SRT. Additionally, it will take a lot of time to edit result from SRT if it was from an ESL provider. As P3 revealed, *"...if I use SRT in an ESL doctor, it will result to a lot of errors. It would be a waste of time for me editing it."* However, good quality recordings and doctor with clear voice in the dictation were only some cases where SRT is effective to employ. For example in the words of P13: *"...if the recordings were clear, I just run it through SRT and it will give you result immediately. You just have to check for a few errors in it."* Participant 7 also asserted, *"SRT is advantageous if it is a long dictation with a good quality of voice..."*

The audio file classification theme varied mainly if the provider (source of audio file) talked in English as its first language (EFL) or communicated in English as second language (ESL). EFL was the language used by providers who has been exposed from birth as their native or natural language. ESL, on the other hand, refers to those practitioners who were non-native speakers in English language but have it as their second language. As imparted by P6, *"it was hard for me to catch up especially when the doctor talks in ESL like an Indian or Pakistan practicing in the US, it will contain many errors when I use the SRT"*. Same sentiments disclosed by P11, *"I just do the transcription manually when the provider is ESL. SRT will result to have many errors and I will waste time editing the result"*. These concluded that the use of SRT was not applicable to all audio file and that the speed of transcription using SRT does not defy accuracy needed in the report (Chang et al. 2010). Nonetheless, audio file classification was evident among them as they first decide on the process they will apply to the recordings. As P5 shared, *"...if the doctor is EFL, I can use SRT, but I just do manual transcription for ESL providers"*.

While the theme audio file classification was predominant in the dataset, its discussion echoed to the succeeding prominent themes, valuable characteristics and negative observations. These themes discuss the pros and cons of SRT being utilized in medical transcription. While the technology possesses favorable benefits, it likewise portrays unfavorable consequences. Such attributes of technology applied in healthcare are crucial to the effectiveness of patient care or otherwise life condition will be at stake (Chang et al. 2010).

4.2 Valuable Characteristics

Valuable characteristics were positive attributes experienced by the medical transcriptionists in the use of SRT in transcription. This theme was derived from the codes that include user-friendly, fast, can be trained and advantage in long dictation. From the testaments of MTs, this theme denote incidence of approval in the use of SRT in transcription. For example, P13 asserted that, *"...if the recordings is clear, I just run it through SRT and it will give you result immediately"*. This incident pertains to the great benefit of technology in generating a speedy report. It reduced the turnaround time in report completion which was associated to cost savings (McGurk et al. 2008). Likewise, Participant 7 also stated that, *"...the use of SRT is advantageous if it is a long dictation..."* The timely report of MTs which was individual patient medical record transcribed from the audio recordings was critical to any healthcare system. This report will serve not only for patient's treatment but also used for billing, coding, reimbursement, audit, legal disputes, insurance, and medical researches among others. Hence, a timely report was significant in taking care of the patient (David et al. 2014).

Valuable characteristic as a theme was a significant element where the technology plays an innovative role over traditional transactions. Another prevalent concept in the dataset was the user-friendliness of SRT where it described a system that was not difficult to learn and easy to use. For example, Participant 4 stressed, *"the transcription process is fast in the SRT, and it is easy to use..."* Also, P2 reveals that, *"if you train the SRT, it will reduce its error and it will adapt to the dictation..."* However, such statements were likewise accompanied with the limitations of SRT like what P4 observed, *"...but you still have to check for error"*. Additionally, P2 stressed that, *"...it is applicable to EFL providers or with clear dictations"*. Moreover, it was interesting to note that the data of appreciation for user-friendliness of SRT mostly came from MTs with medical background as showed in Table 1.

4.3 Negative Observations

Negative observations as a theme reveal the concepts of the concerns of MTs in the use of SRT. These were the unfavorable consequences that the MTs observed based on their datasets. Sub-themes pertaining to this theme includes difficult to edit output, unreliable, waste of time to edit, frustrating and contains error.

Additionally, all the participants consented that transcription output from SRT contains error and therefore the report must be edited by MT. For instance, the statement of P9 revealed, *"... SRT is good only with clear voice in dictation, and you still have to edit the output for it will contains error."* P8 also admitted that, *"...output of SRT has a lot of error and I have to review it several times."* P14 also stressed that, *"I just tried the SRT once and it contains a lot of errors... my colleague committed an error because of SRT... I rather do the transcription manually."* Additionally, P11 shared that, *"...sometimes I get deceived on the error from SRT when I re-check it..."*. Furthermore, participant 9 disclosed that, *"...SRT cannot identify error on re-tracking. That's when the doctor deletes his previous dictations."* These statements from the datasets similarly prove that SRT is not in capacity to replace the work of MTs in the generation of electronic medical records as also revealed in the study of Toit et al. (2015). Nonetheless, the improvement of SRT from previous releases of this technology may only heighten its capability but not in the extent of total reliance in the transcription process (Hodgson et al. 2015).

4.4 Technostress coping

Technostress occurrence at workplace is a psychological illness obtained in working with the use or threat of ICT (Salanova et al. 2013). This stress is common in ITES where ICT is the medium of transaction and operations that include medical transcription. Predictors of psychological experiences in technostress, which are technostrain and technoaddiction (Domino et al. 2014), could disclose MTs difficulties in performing their job particularly those who have already been in service for a long period of time. However, datasets of MTs revealed that both of these predictors were not *"distressors"*, or does not give absolute negative impacts on individuals or the organization (Califf et al. 2015). For example P1 disclosed, *"I don't have any problem with technology, they are basic operations only, even the use of SRT..."* Also the statement of P4 revealed, *"...we only use basic computer applications that are user-friendly. SRT is easy to learn..."*

Nevertheless, there were some coping-ups carried out by MTs particularly in the transition of technology like using foot pedal in transcription before and performing all of the operations using shortcut keys in the keyboard. For some, foot pedal was helpful since it gives a break in using the hands most of the time that will elude from having carpal syndrome. As P9 stated, *"I still like using foot pedal, it helps my hands relax at least for a while but since everyone doesn't use it anymore, so, I just also turn myself using shortcut keys too"*. P3 also added, *"...foot pedal give your hands a little rest, performing everything in the keyboard was just a matter of practice. I just splint and rest my hands for a while to avoid carpal syndrome"*. Furthermore, the use of speech recognition technology in transcription turns out not to be applicable at all instances and causes some strains, which adjustments from MTs were necessary. As P11 shared, *"I just don't use SRT most of the time, especially when the provider is not EFL, I rather do it manually"*. P8 also imparted, *"I seldom use SRT, I rather do it manually to avoid errors on my report"*. Moreover, aside from the slight hiccup mentioned, MTs agreed that the utilization of ICT in the operation is more of a positive stress or *"techno-eustress"* which is useful, reliable and a pace of change in transcription (Califf et al. 2015).

4.5 Highest quality orientation

Highest quality orientation was the final theme that emerged in the codes of medical transcriptionists in using SRT. Timeliness and accuracy of report has been always the issue of adapting SRT in medical transcription (Toit et al. 2015; Hodgson et al. 2015). Specific goals of MTs were to come out with quality

medical report bounded with the required time to finish transcription (turnaround time). Timeliness as part of highest quality orientation theme was prevalent in the dataset of medical transcriptionists in employing SRT in generating reports. For instance, participant 7 shared: *"...I have to finish the correct report, it doesn't matter if I transcribe it using SRT or manually..."* All the participants concurred that their final report should be free from any error. Statements like *"I should not have any error in my report..."* and *"I have to check to make sure there is no error..."* was a common testimony among MTs highlighting the precision of their final report. Likewise, participants also expressed evidence regarding the promptness of the report. As P3 revealed *"...I have to finish on time, otherwise I will not get incentive"*. Same sentiment disclosed by P6, *"...we are free to do what we want for as long as we are done with our job of the day."* Similarly, P9 divulged that, *"...the quota given to us must be done within the day or the turn-around time will be affected."* This concluded that timeliness of generating the report is a great factor which can be assisted best by the SRT (David et al. 2014).

Moreover, timeliness was reflected in the dataset as an advantage by using the SRT. As p7 argued that, *"SRT is advantageous if it is a long dictation with a good quality of voice..."* Likewise, participant 4 stressed, *"the transcription process is fast in the SRT, and it is easy to use..."* However, it was arguable that in terms of correctness of the final report, it was more accurate and reliable by doing manual transcription as the MT manually check the output from the SRT (Hodgson et al. 2015; Toit et al. 2015). It was also disclosed mostly in the statements of all the participants that they still must check for errors the result of SRT. As P4 imparted: *"...but you still have to check for error"* and similarly P12 shared, *"...SRT is quick but you have to check for error."* Nevertheless, the timeliness of reports conducted manually by MTs encompasses with the specified turn-around time or even earlier. As P10 shared, *"I always finish ahead of time, I even help others finish their task..."* Similarly, almost all the participants argued that they finished their quota of the day always ahead of time.

Furthermore, highest quality orientation theme also compasses not only timeliness but much with highest quality of medical report in terms of accurateness. As P16 disclosed, *"I have to check and re-check my work to make sure it has no error."* Similarly, P15 revealed that *"...I can relax and do what I want as long as I've done my job. It should be no error and on-time."* Re-training was also one of the codes that emerged from the participants explaining this theme. A customary policy of the company and as a consequence of final report submitted by MT that contains error was to undergo re-training to avoid incidence of mistakes. This was to maintain final report with utmost quality. As P2 disclosed, *"I unintentionally committed an error on my report, they send me back to training."* Likewise, P11 shared, *"When I got deceived and committed an error, they recommended me to take the re-training."* This practices of MTs settled highest quality in transcription which is about achieving the goal of creating accurate report and timely medical records with the possibility of improving cost effectiveness by the aid of technology like the SRT (David et al. 2014).

5 CONCLUSION

The paper documents at least five interrelated themes that emerged in the data of medical transcriptionists in their use of speech recognition technology. These emerging themes provided valuable source of information in detailing the experiences and concerns of MTs related to SRT. Result showed that MTs experienced commenced with audio file classification. This theme was prevalent in the dataset as the MTs work begins with evaluating the audio file if it would be best to transcribe using SRT or manually. This showed that there were recordings that could be transcribed using SRT like dictation with clear voice and those providers that were EFL. However, it likewise suggests that there were audio file that were effective if transcribed manually like those recordings from ESL doctors. Nevertheless, this theme emerged in conformity with the ultimate goal of MTs to have an accurate and prompt medical report that could be integrated in other healthcare services (Johnson et al. 2014).

Datasets on the theme technostress coping showed mostly techno-eustresses but also displayed technostrain particularly old-timer MTs who had experiences in using foot pedal and transitioning it to full keyboard operations. In light of this, it is recommended for a deeper study on comparison of transcription with foot pedal and full keyboard operations together with their benefits and drawbacks. Likewise, the use of SRT manifests a slight stressor as it cannot fully transcribe dictations particularly with ESL. A standard protocol from the management could be provided to avoid blunder that could cause harm to patients.

The themes valuable characteristics and negative observations connoted the pros and cons of using SRT in medical transcriptions. While SRT was advantageous in the aspect of timeliness over manual transcription, it has unfavourable consequences on the part of accuracy, which in turn an advantage in manual transcriptions. Given the increasing medical documentation demand, a major challenge for

healthcare providers is on how to produce medical records quickly and inexpensively without degrading accuracy. Interrelated with these themes and technostress coping theme were codes for the final theme, highest quality orientation. This theme served as the reason of forcibly adapting of technology in the conventional process as the industry's heart was on highest quality of service. The output in medical transcription was the permanent patient medical record which was significant in all areas of healthcare (David et al. 2014). Different measures and techniques were observed like checking and re-checking, re-trainings, quality assurance, and other quality-oriented procedures including the adoption of SRT were embraced by the industry as they evolved themselves on quality and accepting it as the norm of standard of their service.

While this paper provided perspectives of the experiences of medical transcriptionists in the use of speech recognition technology, the limited sample size and location of the research area did not cover cultural considerations which may influence the result of the thematic analysis. The country has advantage of its strong affinity with the US culture where most of the providers originates. Likewise, it has a large pool of talents with good knowledge of American English and are popular with its strong interpersonal skills (Lee et al. 2014). The study focused in Philippine setting particularly in a medical transcription service organization, thus priorities and other cultural considerations of healthcare professionals may vary from place to place.

Lastly, the themes that emerged as the results of this paper were an overview of the experiences of MTs in their use of SRT. The flexibility of the result of this thematic analysis can be utilized in major analytic study like grounded theory which provides deeper insights in creating new process and formulating policies which was highly recommended. Nonetheless, the result of this study contributed by uncovering issues and concern related to medical transcription's use of speech recognition technology.

6 REFERENCES

- ABS-CBN News (ABS-CBN). 2019. Filipinos Still World's Top Social Media User – Study. Retrieved from <http://www.news.abs-cbn.com/>.
- American Health Information Management Association (AHIMA). 2016. <http://www.ahima.org/>.
- Basma, S., Lord, B., Jacks, L. M., Rizk, M., and Scaranelo, A. M. 2011. Error Rates in Breast Imaging Reports: Comparison of Automatic Speech Recognition and Dictation Transcription. *American Journal of Roentgenology*. American Roentgen Ray Society. DOI:10.2214/AJR.11.6691.
- Benner, C. 2006. South Africa On-call: Information Technology and Labour Market Restructuring in South African Call centres. *Regional Studies, South Africa*. 40(9).
- Board of Investments (BOI). 2014. 2014 Investment Priorities Plan, Industry Development for Inclusive Growth. Retrieved from <http://www.dti.gov.ph/>.
- Braun, V., and Clarke, V. 2006. Using thematic analysis in psychology. *Qualitative Research in Psychology*, 3 (2). pp. 77-101. ISSN 1478-0887
- Business Process Association of the Philippines (BPAP). 2010. Philippines: The New Outsourcing Hub. Retrieved from <http://www.bpap.org/>.
- Business Processing Association of the Philippines (BPAP), and Department of Science and Technology - Information and Communications Technology Office (DOST-ICTO). 2015. PHILIPPINE IT-BPO INVESTOR PRIMER. Retrieved from <http://www.bpap.org/>.
- Califf, C., Sarker, S., Sarker, Suprateek & Fitzgerald, C. 2015. The Bright and Dark Sides of Technostress: An Empirical Study of Healthcare Workers. Research-in-Progress. Thirty Sixth International Conference on Information Systems. Fort Worth.
- Chang, C.A., Strahan, R., and Jolley, D. 2010. Non-Clinical Errors Using Voice Recognition Dictation Software for Radiology Reports: A Retrospective Audit. *Journal of Digital Imaging*. DOI 10.1007/s10278-010-9344-z.
- David, G., Garcia, A., Rawls, A., and Chand, D. 2009. Listening to what is said – transcribing what is heard: the impact of speech recognition technology (SRT) on the practice of medical transcription (MT). Bentley University, Waltham MA, USA. *Sociology of Health & Illness*, 31(6), 924–938.
- David, G., Chand, D., and Sankaranarayanan, B. 2014. Error rates in physician dictation: quality assurance and medical record production. *International Journal of Health Care Quality Assurance*. Vol. 27 No. 2, pp. 99-110. Emerald Group Publishing Limited, DOI 10.1108/IJHCQA-06-2012-0056.

- Domino, J., McGovern, C., Chang, K. W., Carlozzi, N. E., & Yang, L. J. 2014. Lack of Physician-patient Communication as a Key Factor Associated with Malpractice Litigation in Neonatal Brachial Plexus Palsy. *Journal of Neurosurgery, Pediatrics*. 13(2), doi:10.3171/2013.11.PEDS13268.
- Everest Research Institute (Everest). 2012. Overview of the Global Sourcing Market. Geneva, Switzerland.
- Glaser, B. 1992. Basics of grounded theory analysis: Emergence vs. forcing. Mill Valley, CA: Sociology Press.
- Glaser, B. 1998. Doing grounded theory: Issues and discussions. Mill Valley, CA: Sociology Press.
- Healthcare Information Management Outsourcing Association of the Philippines (HIMOAP). 2015. Retrieved from <http://www.himoap.com/>.
- Hodgson, T., and Coiera, E. 2015. Risks and Benefits of Speech Recognition for Clinical Documentation: A Systematic Review. American Medical Informatics Association. Oxford University Press. DOI:10.1093/jamia/ocv152.
- Johnson, M., Lapkin, S., Long, V., Sanchez, P., Suominen, H., Basilakis, J., and Dawson, L. 2014. A Systematic Review of Speech Recognition Technology in Health Care. *BMC Medical Informatics and Decision Making* 14:94. Retrieved from <http://www.biomedcentral.com/1472-6947/14/94>.
- Kshetri, N., and Dholakia, N. 2011. Offshoring of Healthcare Services: The Case of the Indian Medical Transcription Offshoring Industry. *Journal of Health Organization and Management*. 25(1).
- Lee, A., Vari-Kovacs, Z., Yu, S., Lall, A. 2014. Business Process Outsourcing in the Philippines. Microsoft Case Studies Series on Information Technology, Public Policy and Society. *Lee Kuan Yew School of Public Policy*.
- McGurk S, Brauer K, MacFarlane TV, Duncan KA. The Effect of Voice Recognition Software on Comparative Error Rates in Radiology Reports. *British Journal of Radiology*. 81:767– 70. DOI:10.1259/bjr/20698753.
- Ng, K., and Hase, S. 2008. Grounded Suggestions for Doing a Grounded Theory Business Research. *Electronic Journal of Business Research Methods*. (6:2), pp. 155–170.
- Salanova, M., Llorens, S., and Cifre, E. 2013. The dark side of technologies: Technostress among users of information and communication technologies. *International Journal of Psychology*, Vol. 48, No. 3, 422–436.
- Technical Education and Skills Development Authority (TESDA). 2015. <http://www.tesda.gov.ph/>.
- The Philippine Star (Philstar). 2014. Retrieved from <http://philstar.com/>.
- Tholons. 2016. Tholons 2016 Top 100 Outsourcing Destinations, Rankings & Executive Summary. Retrieved from <http://www.tholons.com>.
- Toit, J., Hattingh, R., and Pitcher, R. 2015. The Accuracy of Radiology Speech Recognition Reports in a Multilingual South African Teaching Hospital. *BMC Medical Imaging* 15:8, DOI: 10.1186/s12880-015-0048-1.
- Transparency Market Research. 2015. Retrieved from <http://www.transparencymarketresearch.com/>.
- Singh, M., and Pal, T. 2011. Voice Recognition Technology Implementation in Surgical Pathology: Advantages and Limitations. *Archives of Pathology and Laboratory Medicine*. DOI:10.5858/arpa.2010-0714-OA.
- Urquhart, C., Lehmann, H., and Myers, M. 2010. Putting the 'theory' back into grounded theory: guidelines for grounded theory studies. *Journal in information systems*.
- Yin, R.K. 2010. Qualitative research from start to finish. *Guilford Press*.

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