

Enskilment of Smartphone Technicians: An Anthropological Inquiry on technicians of Ritchie Street, Chennai

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Abstract: This research attempts to identify and explore skill acquisition patterns of the millennial technicians associated with the urban informal electronic market of Ritchie Street, Chennai. Grounded theory complemented with life history method and participant observation was employed to look into the factors that mobilized youth towards mobile repair economy, the process involved in their skill acquisition, and the ethnic factors entailed in facilitating this. The empirical study reflects that millennial youth affiliated to smartphone repair of this informal electronic market space possess minimal formal technical training and acquire necessary skillset through apprenticeship, experiential learning, and peer learning. The study also reflects on gender inequalities perceptible in the absence of women in this technology-dominated space, which is in contrast to the global scenario. This research attempts to cross the binaries of technology and culture to give a comprehensive anthropological understanding of the life of smartphone technicians involved in repairing, reengineering, and refurbishing smartphones.

Keywords: Apprenticeship, Gender, Informal Electronic Market, Skill Acquisition, Smartphone Repair

1 INTRODUCTION

The policy literature estimates that 93% of the total workforce in India is associated with the informal sector, of which only 5.4% of the workers have undergone formal training, reflecting a crucial challenge to skill development. Similarly, the skill gap study conducted by National Skill Development Corporation for 2010-2014 reveals that human resource requirement in Electronics and IT Hardware will escalate to 8.94 million in 2022 from 4.33 million in 2013 (MSDE, 2015). Prof. G Venkatesh at IIT-M and director of hi-tech technological company 'Sasken' approximates that the smartphone circulation will increase to 750 Million units over the next 5-7 years from the current 250 Million units, where the surge will predominantly focus on refurbished units. This occurs at a time when there is a crisis in employment opportunities, and a slowdown in official manufacturing clubbed with concerns over flooding of Chinese products (Anamta Nadeem, 2019; ET Online, 2017). These discourses within the political economy and technological advancements interlinked with the increasing penetration of smartphones crossing the barriers of structured inequalities of caste, class, and gender from an anthropological perspective provide a background to explore into the skill acquisition patterns of highly skilled millennial technicians associated with the urban technology-dominated space of Ritchie Street.

2 ORGANIZATION OF THE STUDY

The article proceeds in the following pattern- Foremost section delves into the definition of skill followed by policy discourses on skilling and positioning the study in the existing research gap. The subsequent segment discusses the rationale behind the choice of study location, paradigm adopted, and the methods employed for assembling data

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and the tools and techniques utilized. Further, the article reflects on the significant skill acquisition patterns, practices of skill updation along with an ethnographic portrayal of the study location. The concluding section summaries this socio-technical inquiry and suggests future research areas.

3 OBJECTIVES

The sociotechnical study primarily attempts to enquire into the process of skill acquisition among the technicians involved in the smartphone repair economy of Ritchie street. Further, the inquiry probes into the ethnic factors entailed in the process of skill acquisition. Finally, it reflects the gender disparities exhibited within this technology-dominated space.

4 LITERATURE REVIEW

4.1 Definition of skill and policy discourses on occupational skilling

Skill acquisition has been studied in detail by different scholars from the perspective of cognition, as tacit and embodied forms of knowledge, from an ecological perspective, in different contexts like handicrafts, weaving, and other artisanal sectors. The initial section of this thematic literature attempts to give a scholarly explication of the concept of skill within the acquisition paradigm. Skilling as a process is context-dependent and cannot be studied in isolation, ignoring the matrix of social relations and the broader political economy (Ingold, 2002; Sundar, 2018). Anthropologists following the phenomenological approach have ventured into defining skill as an embodied knowledge that needs to be apprehended interlinking the agency of material body, the human entity, mind, and environment (Gieser, 2008). Bourdieu's concept of Habitus provides a framework to explain how these embodied forms of knowledge get transmitted through the structures embedded

in the individual and collective consciousness within the socio-cultural milieu. At the same time, this was criticized from the perspective of skill acquisition as it leaves little scope for creativity, innovation, and variation (Marchand, 2010). Sundar (2018) contributes to an eclectic definition of skill to the literature, asserting that skill should not be confined to a set of specific and standardized techniques but includes different forms of knowledge, elements of character, technical capabilities, bodily propensities, and the potentiality to innovate. Ingold (2002) posits an ecological approach to skilling and describes skill not as a property retained by an individual as a biophysical entity but as a synthesis of relations shaped by organism-person indissolubly body and mind within a structured environment. He uses James Gibson's concept of education of attention to explain the schema where the novice observes, learns, and imitates skills from the facilitator during the process of enskilment. Gieser (2008) adopts Heidegger's concept of being in the world to explain this process of acquisition, where the rhythm of interaction gets established between the novice and the facilitator, the former entering into the complex intersubjective process of imitation encompassing mind, body, natural and social environments. This literature also emphasizes the significance of emotion and empathy in enskilment in the context of apprenticeship. Lave and Wenger (1991) describe learning as a process that occurs within a participation framework, a specific kind of social practice entitled as legitimate peripheral participation. Novices engage with communitarian practices and gradually learn the socio-cultural practices of the community. Legitimate Peripheral Participation provides a framework to understand the relationship between learners and the facilitator and the process of transition of a newcomer from an outsider to acquiring the practices of the community and gradually evolving in terms of both skills and competencies to become a full member of the group.

The policy discourses on technical skilling from the context of contemporary India with particular reference to electronic repairing would be discussed here to substantiate the significance of this study. According to the policy literature, only 4.69% of the total workforce in India has undergone formal skill training compared to countries like Germany, UK, the US, Japan, and South Korea, with 75%, 68%, 72%, 80%, and 96% respectively. In the course of the next two decades, the labor force in developed countries is going to fall by 4%, at the same time in India it is going to increase by 32%, which emphasis on the need to invest in skill development as to contribute for the economic development of the country (MSDE, 2015). The study on skill gap study by NSDC over a period from 2010-2014 reveals that employment requirement in Electronics and IT Hardware will shoot up to 8.94 million in 2022 from 4.33 million in 2013 (MSDE, 2015). Statistics show the surge in mobile-cellular subscriptions per 100 inhabitants from 0.34 in 2000 to 86.94 in 2018 in India (ICT Facts and Figures, 2018). Simultaneous with the increasing penetration of smartphones, the growth and development of the repair economy and its allied sectors prosper with an immense potential to provide employment opportunities.

4.2 Significance of repair economy and works pertaining to the Indian context

Repair of mobile phones places itself within the idea of circular economy in an urban setting, and the allied process like refurbishing, reengineering, and recycling are advantageous to the environment contributing to sustainable development goals (Türkeli et al., 2019). A significant ethnographic study by Assa Doron (2012) attempts to delve into linkages between consumer culture, the Indian middle class, and the lower class and their negotiations with global capitalism analyzing the mobile phone repair ecosystem of Banaras. The article also reflects the experiences of both the technicians and customers regarding the distribution of technology, service applications, and economic opportunities. Another ethnography study on mobile store ecology of an urban slum in Mumbai describes the role of information and communication technology applications as a potential entrepreneurial niche, emphasizing various aspects pivoted around mobile phones, including their repair (Rangaswamy & Nair, 2010).

5 RESEARCH GAP

Scholars have widely studied the impact of ICT, including the use of smartphones, its effects on social and routine lives, along with its repair and reengineering possibilities to list a few. But there exists a gap in the process of skill acquisition followed by technicians involved in repairing and reengineering of smartphones. With increasing sophistication and updation of software, this is an intriguing area to explore. The current study places itself in this gap and contributes to the domain of anthropology of work.

6 RESEARCH METHODOLOGY

This synchronic socio-technical research was conducted as a part of the Summer Fellowship Program at IIT-M. The location selected for the study was Ritchie Street, acclaimed as the largest electronic market of Chennai located in the arterial portion of the city, and with a footfall of almost 15000 per day (Evelyn Ratnakumar, 2012). The smartphone technicians associated with this technology-dominated space majorly belongs to the age cohort of 18-35 and possess minimal formal training in repairing, but is highly skilled at performing complicated repairing as well as reengineering works. This background knowledge has led to an inquisitiveness to learn more about the life of these experienced technicians clubbed with geographical proximity to the location is the rationale behind choosing this study location. Ethnographic engagement with Ritchie Street was carried out for a period of five weeks from May 2019 to July 2019, with field visits scheduled for thrice a week for four hours per day with five fieldworkers from varied disciplines focusing on different technical as well as social aspects of this space. The study espoused the constructivist paradigm giving scope to infiltrate into the subjective experiences of these technicians within their work environment. Contemporary social science literature asserts that the constructivist paradigm provides a framework to understand human experiences as reality is socially constructed and facilitates to reflect on context-dependent subjective and intersubjective realities (Coghlan

& Brydon-Miller, 2014; Mackenzie & Knipe, 2006). A qualitative methodology was hence employed, as it served to explore, identify, and analyze patterned behaviors and social processes (Given, 2008). The study incorporated a constructivist grounded theory method complemented with participant observation, ethnographic engagement, and life history method to delve into assembling data. Grounded theory as a prominent qualitative method involves an inductive, systematic, iterative, and comparative approach enabling the researcher to engage in enduring discourses with the empirical data and emerging theoretical categories (Bryant & Charmaz, 2011). The initial days of the field immersion were allocated to capture the nuances within the field. Gradually with a better understanding of the area and collection of comprehensive data, theoretical sampling of the collected data helped to probe into a specific aspect of inquiry. Life history method was also included to enquire into subjective specificities of life of the technicians with particular reference to their socio-economic background, the problems they faced in their formal education, the factors that mobilize them towards smartphone repairing to quote few. Linde defines life story as a particular kind of discourse unit which is temporally discontinuous and is a collection of stories told by the research participant about oneself (Frank, 1995). Short life stories collected through in-depth interviews and open-ended questionnaires extended for an interval between 30 minutes to 1 hour. These short life stories are collaged and interpreted to get a larger map of the phenomenon indicated. Based on editing short life stories, the paper follows a topical life document pattern. The topical life document, rather than a holistic understanding, try to incorporate a particularistic understand of an aspect of life (Plummer, 2001). The technique adopted for acquiring narratives from research participants was unstructured interviews. 37 unstructured interviews were conducted with more than 25 of the technicians belonging to the age group of 20-32. Initially, data was gathered from the technicians who were willing to participate in the study. Further adoption of theoretical sampling gave rise to specific categories of inquiry, which entailed intensive sampling and purposive case sampling. The former secured more information-rich cases while, purposive sampling enabled to identify particular kinds of situations for an in-depth investigation that allowed profound understanding (Djamba & Neuman, 2002). Informed consent was obtained from all the research participants explaining the objective of this research while ensuring that data will be used exclusively for academic purposes. The identity of the informants and personal information is kept confidential, along with the photographs and video recordings collected from a few of the technicians with their consent. Names of the technicians in this paper have been referred to using alphabets to ensure confidentiality.

7 RESEARCH FINDINGS

7.1 Empirical overview of the study area

Located within the focal areas of Chennai, the electronic market stretches to include Narasingapuram Street, Wallers street, Meeran Sahib Street, Mohammad Hussain Sahib Street, and Guruappa Street collectively referred to as

Ritchie Street. A portrait of these streets would consist of spatially constricted lanes congested with traffic, parked vehicles, and moving crowd along with several electronic shops occupying spaces of worn-out high rise buildings. The history of Ritchie Street can be traced back to the 1970s when it started as a Radio market. Gradually the market evolved with the changing technological scenario, and since the early years of the millennium, mobile phones have dominated the space. The shops here mainly deal with repairing and re-engineering smartphones and laptops, assisting engineering projects along with sales and services of a wide range of electronic gadgets. Empirically it was observed that the majority of the shops revolve around sales of smartphone accessories and its services. Smartphone services typically include glass replacement, software issues, hardware issues, refurbishing used phones, and re-engineering of phones. Hardware problems mainly involve faults in the display, mic, speaker, water damage, charging-connector matters in addition to motherboard fault and IC fault. Software issues of smartphones include software updates, issues associated with pattern lock, FRP, hanging, IMEI issues, etc. which are usually resolved by flushing.

7.2 Socio-economic background of the technicians

An in-depth conversation with the research participants enabled them to reflect on their age, educational profile socio-economic background during their childhood years. 34 of the 37 research participants belonged to the age cohort of 18-35. The education profile of the technicians reveals that 19 of them possess 12th standard education, 3 of them stopping at 10th grade, 2 of them from completing a bachelor's in engineering, and the remaining 13 completing or dropping out of UG courses from various streams. Since a purposive sampling was employed in later stages of data collection to focus on millennial technicians, the analysis revealed that 26 of the 37 technicians belonged to the Muslim community. Analysis of empirical facts and narratives gathered to form the technicians evinced two major structural patterns mobilizing youth into this informal mobile servicing niche. The first category indicates that financial difficulties within the family and lack of interest in formal school education force them to enter into the job market, and these youth, opting for mobile service as their profession. N's narrative very well depicts this. During school days, his parents were into informal sector jobs. Lack of financial resources to support his education allied with the necessity to help his family compelled him to search for livelihood opportunities. He got introduced to Ritchie street through a neighbor and worked as a sales boy, which made him enthusiastic to associate with smartphone repairing. Gradually he acquired the necessary skill set through peers and web sources and currently owns a shop, earning a profit between ₹1500-₹2500 per day. The subsequent pattern observed is the business background of family or kins, attracting them into smartphone repair services.

7.3 Skill Acquisition Patterns

Content analysis of the empirical data draws to the fact that 35 of the 37 research participants have acquired the

necessary skillset without any formal technical training and through apprenticeship. A significant pattern observed in the narratives reflected that for the majority of these technicians, interest was one among the factors that attracted them towards mobile repair economy, ignoring the underlying socio-economic conditions. As noted by Rangaswamy and Nair (2010) on their study on mobile store ecology of the urban slum, Ritchie street also provides a niche to acquire repairing skills through unpaid or minimally paid apprenticeship for those passionate to learn.

Seeking an apprenticeship in this locale is tightly knitted with kinship and communitarian ties. All the 37 research participants in this study have secured entry into this space through either kinship or communitarian connections, where trust stands as the prominent determinant of selecting a novice. Apprenticeship is often defined as the acquisition of knowledge, pragmatically within the context, where the verbal mode of instruction is given secondary significance to tangible skill and display (Marchand, 2010). Mr. R, a 23-year-old technician who runs his shop and a specialist in glass replacement, shares his narrative where the role of both kinship and communitarian linkages is evident in molding his current professional status. Undertaking a part-time job during college days at Burma Bazar equipped him with the necessary skillset and networks to establish a shop at Ritchie Street. He was initiated to Burma Bazar by his kin ('*chittappa*'), and later communitarian ties introduced him to Ritchie Street. A noticeable pattern observed concerning the process of apprenticeship can be depicted using the narrative rendered by Mr.S. He was being introduced to Ritchie Street by his brother to work as a sales helper after 10th standard. With increased familiarity with the work environment, he was assigned to perform minimal skill requiring jobs like fixing the tempered glasses to smartphones. The work environment in close association with the senior technicians also gave exposure to the various software and hardware issues that occur, within almost a year he was able to recognize the different problems that arise in the smartphone. The salary during this period is minimal, ranging to ₹150-₹300 per day. With two to three years of continuous engagement with the field, they gain expertise to perform complicated repairing and re-engineering tasks along with a good idea about the market dynamics and customer preferences. Analyzing through the lens of the acquisition paradigm, these millennials entering the market acquire the tacit and embodied knowledge on repairing through constant engagement, immersion, observation, imitation, and shared performance facilitated by apprenticeship. Accessibility to information and communication technology enabled them to use web resources to acquire and improvise their skillset. Experiential learning and peer discussions also complement the process of skill acquisition. Similar to the case mentioned in a couple of researches on mobile repair economy of Mumbai slum and North India, Ritchie Street also exhibits a pattern where self-training supplemented with peer learning played a crucial role in skill updation in a scenario of advancing technology (Doron, 2012; Rangaswamy & Nair, 2010). The research participants also conveyed about the routine interaction occurring between the technicians during evening hours at a snack point within

the arena, and the collective WhatsApp group both act as a primary method for disseminating technological information.

A notable feature observed was the Burmese competency of the technicians here. The technicians acquire Burma language inherently along with smartphone repairing skills. They use this as a secret code of communication in the presence of the customers to negotiate with the service charges. 32 of the 37 technicians interviewed for this study possessed listening and speaking proficiency in Burmese.

Work specialization emerges as a pattern during the theoretical sampling of the gathered data. Glass replacement is one contemporary specialization in repairing developed with the increasing sophistication and price of smartphones. Also, few technicians focus exclusively on high priced phones like iPhones, reflecting the increased work specialization within the economy of smartphone repair. Refurbishing and reengineering tasks are also emerging specializations among the technicians here.

Circuits with Shenzhen often described as the 'Silicon Valley of Hardware' is a common theme narrated by the research participants (An Xiao Mina & Jan Chipchase, 2018). Travel to areas like Shenzhen, Guangzhou of China for purchasing spare parts, and other advanced types of machinery is quite frequent among the technicians and shop owners of Ritchie street. Strong connections with the Shenzhen updates them with the changing technologies. In a few shops, it revealed a pattern where one among the partners frequently visits China while the other manages the repairing works here.

Delving into the narratives portrayed that all of the respondents were happy with their profession. Possession of skillset as a facet of pleasure was observed here, which is not always empirically observed in other jobs. A reference to set would be Sundar's (2018) work on skilling among the fisherman community which asserts about the pride in possession of skills along with the element of pleasure and satisfaction associated with. '*enakku entha job romba pudikkum*' (I really like this job) is a verbatim uttered by all the 37 research participants. Apart from work satisfaction, the technicians had a higher affinity towards the profession. An intriguing experience shared by Mr. Y asserts that the kind of acceptance and respect he receives from his neighbors due to his skillset makes him feel more knitted to the profession.

7.4 Gendered Spaces

Participant observation and interviews in Ritchie street persuaded to incorporate a gender perspective to this study. Empirically Ritchie street can be considered as a male-dominated space with negligible female visibility. In spite of 60 hours of field immersion and constant inquiry of women technicians, we could not encounter any female technician in Ritchie Street. A similar scenario was depicted concerning customers, in a space with a footfall of almost 15000 per day; we could encounter only two female customers, who came to repair iPhones. Assa Doron's (2012) article on the mobile repair economy of North India asserts a similar situation of the affinity of masculinity with technology, which is evident in Ritchie Street also. Probing

into questions on lack of female representation in the repairing economy elicited responses that women are not capable of negotiating with customers in case of disputes. Few of the research participants asserted that the absence of women is due to the difficulty in learning the necessary skillset for 'a profession meant for men.'

In contrast, accounts communicated by research participants who frequently travel to Shenzhen revealed the domination of women in the smartphone repair economy of China. An interesting fact is that even without official statistics, academicians estimate that 60-90 percent of the labor force involved in the manufacturing process of electronic goods in Thailand, Vietnam, and Malaysia are women, although there exist wage disparity and health risks (Laura Villadiego, 2017). Even though the gendered division of labor in these countries is alarming, it reveals a more significant fact that it is not the inefficiency of women that abstains them from this field but instilled notions of patriarchal values that do not give women a space to pursue such careers. Ritchie street lacks the gender neutrality of human labor resources, which gets reflected in this work also.

7.5 Typical Case Studies

This section, through narratives of Mr. A and Mr. S, gives a glimpse of the two normative career trajectory patterns evolved from the theoretical sampling of the data.

7.5.1 Mr. A and his transformation to the most demanded technician.

This particular shop run by Mr. A and his brother is the most crowded shop encountered during field immersion at Ritchie street. Mr. A is in his early thirties and possesses more than a decade of experience in mobile servicing. He hails from Tirunelveli district of Tamil Nadu and has migrated to Chennai after school education. Curiosity towards mobile phones since the early years of the millennium when Nokia 1100 dominated the market motivated his brother to start a mobile phone servicing shop at Ritchie street almost 14 years before. His father was associated with the electronic business, so this networking fetched them entry into this ecosystem. Simultaneously with his graduation in company secretary, Mr. A started assisting his brother, exposing him to the world of mobile repair economy. After graduation, he got engaged with the shop on a full-time basis and evolved to become the chief technician here. Expensive phone users and iPhone users, formed the dominant class of customers in this shop as his specialization lies in it. His expertise lies in resolving hardware, software, and glass replacement issues. To quote him, all that matters when it comes to smart reengineering and repairing is interest. The amount of time required to learn the skill also depends on the passion for learning. '*Shenzhen being the birthplace of mobile phones,*' quoting his verbatim, they usually travel to China to purchase spare parts, various sophisticated machinery, and to understand the nuances in the industry. The linkages with fellow mobile technicians have facilitated his initial travel to China. Mr. A has been to Shenzhen and Guangzhou quite many times, and his brother is a frequent

traveller who visits Shenzhen at least once in a month. Mr. A Shares his experiences in China, including the use of Google translate for communication, the availability of Indian cuisines there, and the market scenario. He compares the spare parts market in Shenzhen to a vegetable market here where different types of machinery and spare parts are available like tomatoes and potatoes. Besides, he gives a comparative analysis of the smartphone service sector dominated by women in China in contrast to Ritchie street, where the presence of women is negligible. Mr. A is pleased and enthusiastic about his profession.

7.5.2 School Dropout to a Skilled Worker Mr. S and Story of his Life

Mr. S is in his late adolescence but possesses five years of experience in smartphone servicing. He is a native of the Paramakudi district of Tamil Nadu, who grew up in Chennai. Lack of financial resources made his parents enrol him in a government school. School years were strenuous due to his lack of interest in curriculum and constant pressure from teachers to perform well. Frequent class bunking fetched him a black mark in transfer certificate, which affected his entry to further institutions. Following, he got introduced to Ritchie street through a neighbor. His career trajectory started in a shop where he was employed to assist sales and replace tempered glass with a remuneration of ₹150 per day. After a years' experience, he gradually started observing and experimenting with hardware repairs. It took almost two years of experiential learning to gain the required skillset. At the age of 18, with three years of experiential learning, he started a shop in partnership with a friend from a similar background. But political-economic scenario severely affected their shop, leading to loss of almost two lakhs of investment, forcing them to re-enter as a wage laborer for ₹900 per day. His expertise lies in rectifying board complaints, hardware and software issues, and manual glass replacement. As a subsidiary income source, he travels to Mumbai to get second-hand mobile phones to refurbish it and sell it in the market. He is delighted with the profession evident in his words '*ennaku edu romba pudikkum, edu than enn vazhka*' (I really like this and this is my life). Also, the importance he gets while he resolves phone complaints among his family and neighborhood circles gives him more contentment in this profession.

8 CONCLUSION

The ethnographic engagement at Ritchie Street through mixed methods of grounded theory, participant observation, and life history method tried to understand how Ritchie Street as an electronic gadget ecosystem works to mobilize youth who then acquire the essential skillset gain confidence and finds a foothold in life. The empirical study mainly focused on skill acquisition patterns among the smartphone technicians who, according to the gathered data, belongs to the age cohort of millennials (Berger, 2018). Apprenticeship was the significant skill acquisition pattern observed from the analysis of the assembled data. Besides this web resources, YouTube videos, and specialized websites on gadgets along with experiential and peer learning facilitated in enhancing their skill set. The role

of kinship and communitarian relationships is inevitable to fetch entry into the Ritchie street ecosystem. The educational background of the technicians with negligible formal technical training prompted to think about the formal education system that often fails to accommodate these youth who are highly efficient at their work but were not performing well according to parameters of the formal curriculum. An intriguing factor noted in Ritchie street is the stark absence of females smartphone repairing technicians compared to Shenzhen, where females dominate the industry. The correspondence with Shenzhen is so evident in this informal market, with technicians and shop owners frequently visiting Shenzhen for purchasing spare parts as well as to learn the technological advancements in the smartphone industry. To conclude, the paper tries to give a glimpse of Ritchie street as an electronic hub, the demographic resource of the space, and the patterns of their skill acquisition and skill updation with the changing market scenarios.

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