User Experience Design (UXD) Community of Practice in Malaysia and their Practice Constraints: A Participatory Action Research

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Abstract: In this study, the researchers' participated in the user experience design (UXD) community's events and programmes, and several constraints were identified. Participatory action research (PAR) allowed the researchers to contribute, either directly or indirectly, towards solving problems during the study. The participatory research itself gauged fundamental issues which pointed to the importance of grounded theory as an analysis approach in HCI. In this research, PAR contributed to understanding the UXD community practice and to uncovering the sources of practitioners' frustrations, and in to identifying problems areas of UXD practices. In sum, PAR is the most appropriate method to understand UXD practice because of its abilities to Uncover silent practices through the netnography, observation and field studies. The answers to sources of frustration varied according to the method of data collection. In the netnography study, issues were more in-depth and related to clients' attitude, behaviour and knowledge. In the participant observation study, the problems of practice mostly related to the lack of knowledge or awareness of user experience terminology in general. With survey methods, the problems related to the mindsets and knowledge of the people involved in development process. In the field study, lack of management support, skills and awareness among those involved in the development process and the clients and potential customers came to the fore.

Keywords: Grounded theory, participatory action research, user experience design practice and practice constraints

I. INTRODUCTION

Grounded theory was "discovered" by Glaser and Strauss in 1966 during their studies on death and the dying in hospitals (Glaser & Strauss, 1967; Wasserman et al., 2009).

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The fundamentals are identical to the participatory design approach in HCI where a certain level of participation by the researcher is required. Since HCI is moving towards engaging human values and experience in the digital age, grounded theory is seen as an emerging method that enables insight into people's values, understanding and experience (Sellen et al., 2009). Furniss et al. (2011) used grounded theory to understand why practitioners chose particular usability evaluation methods. Unlike typical hypothesis testing, grounded theory emphasises theory development from a continuous interplay of data collection and data analysis (Wasserman et al., 2009; Lazar et al., 2010). The fundamental process of grounded theory is to code data and then group these codes into concepts (Glaser & Strauss, 2009; Birks & Mills, 2013; Charmaz, 2014). Grounded theory's method provides rigorous procedures for researchers to check, refine and develop ideas and intuitions about data (Charmaz, 1996). The method generally consists of four stages: (1) open coding; (2) development of concepts; (3) grouping concepts into categories; and (4) formation of a theory (Lazar et al., 2010).A code in qualitative inquiry is most often a word or short phrase symbolically assigned to the content of interview transcripts, participant observation field notes, journals, documents, literature, artefacts, photographs, video, websites, e-mail correspondence and so on (Saldaña, 2012). Initial coding in grounded theory is open-ended and done line-by-line (Wasserman et al., 2009). In this study, this coding is applied in the netnography, and survey result. However, one coding method alone may not be sufficient to capture the whole process in a set of data (Saldaña, 2012). Therefore, value coding methods is applied in the participant observations method to enhance accountability and the depth and breadth of findings.

The long tradition of quantitative methods has gained dominance in Malaysia (Aykin& Gould, 2009). However, the lack of comparative studies requires that grounded theory methods be applied, especially in discovering developers' work practices (Lethbridge et al., 2005). This is because there is little background knowledge or data to comparatively analyse the aforementioned phenomenon. In the 1980s and earlier decades, the Participatory Action Research (PAR)

approach was used mainly in social sciences research (Baum et al., 2006; Kindon et al., 2008). In the 1990s, more participatory research was conducted and textbooks that include PAR became more common (Selener, 1997; McIntyre, 2008). It has been reported that in the 21st century, PAR is increasingly being used in healthcare research (MacDonald, 2012). Participation has been central to improving health since the WHO Health for All Strategy set importance on health promotion strategies (Baum et al., 2006); PAR was mainly used in low income countries for needs assessment, planning and evaluating health services (Selener, 1997). In the HCI discipline, the closest methodology to PAR is Participatory Design (PD). PD was introduced in the 1990s, inspired by "cooperative design", the user centred design (UCD) approach in the Scandinavian countries (Jensen, 2013). PD is a set of theories, practices and studies related to end users as field participants in activities that lead to software and hardware computer products (Muller, 2003). Within the HCI discipline, PD is normally used to encompass two different groups of technology: developer and end user (Muller & Kuhn, 1993; Muller, 2002). According to Muller (2003), both researchers and practitioners are brought together within the context of technology design and development or other experiences in life. However, PAR is not limited to the design of solutions. Furthermore, Action Research (AR) investigates a phenomenon through intervention in a problematic situation (Bilandzic& Venable, 2011). It aims at solving practical problems and generating new knowledge in a collaborative way between researchers and participants in order to take action and make changes (MacDonald, 2012).The concepts of participation and action should be more than just identifying problems. They involve an action to instil positive change with the involvement of the "community of interest" (Walter, 2009). However, it is noted that PAR is more than a method. It is a methodology or a research design that comprises several methods of research and data analysis techniques combined to form PAR.The participatory approach is useful in investigating how industry practitioners, who create interactive technologies, develop their goal and motivation in order to cope with rapidly changing technologies and knowledge constraints. Participatory design is useful in assessing the practitioners' non-process and non-reported practices of their work in order to embed HCD and/or UXD principles.

According to Wenger et al. (2011) "Communities of practice (CoP) are groups of people who share a concern or a passion for something they do and learn how to do it better as they interact regularly."This study investigates the practice of user experience design (UXD) and its constraints. Observation was undertaken to verify if the group of people gathered are those who are willing to learn and practice UX.A participatory action research (PAR) was employed. The PAR procedure is explained according to the methods chosen in the data collection. Each method's objectives were driven by the results of the preceding methods following grounded theory. Data analysis procedure is described, followed by the reliability and validity control in the data collection. The purpose of PAR is to build relations of personal trust to elicit fully and comprehensively the problems among the communities of practice (CoP). The researchers blend into the social scene to minimise the impact of their presence on the behaviour of those being observed. The observation method in HCI research has shifted from focusing on understanding end users to investigating the people who create the user experience for end users. A user-centred design approach is applied as the main strategy, and classic participatory methods are modified to gain as much information as possible. The results collate the goals, values and beliefs of the participants who have an interest in user experience and try to incorporate user experience in their development processes. Interviews are the most frequently used methods in field study. All these point to the importance of a multi-method approach to collect various types of data. However, the method chosen must reflect the requirements and match the research phase appropriate to the project's goals and constraints. The method requires pilot tests in advance of the actual study (Dray et al., 2003). Action research is a self-reflective spiral of planning, action, observation and reflection then re-planning, further implementation, observation and reflection (Kemmis& McTaggart, 2005). During the participation period, the researchers attempt to engage in communication to understand the problems within the CoP and then identify the actions to be performed in order to solve the problems found during the participatory session. Four inquiry modes in evaluating practice following Mark et al.'s (1999) framework was considered: (1) values inquiry to identify values positions of CoP through a netnography approach; (2) description to assess the process and knowledge of practitioners through observation in the participatory approach; (3) causal analysis to estimate constraints in practice through focus group and observation; and (4) classification of constraints through field study and on-site interviews.

Understanding the theory of HCI received little attention before 2005, as researchers and practitioners were striving to find out what worked in practice. These researchers use the term UXD to differentiate between the focus of study on the user experience quality and on usability. Even so, one may argue that the term UCD can be used to refer to the process of user experience. In the context of Malaysia, usability has received little acknowledgement or appreciation compared to the term user experience. Therefore, the term UXD is used to refer to principles which are similar but broader in their scope of quality. Studies employing both qualitative and quantitative approaches in understanding UXD practice began to receive recognition in late 2010. While the universal focus on usability and the software development process is growing, users are still struggling with product and system difficulties (Hussain et al., 2016; 2017a; 2017b; 2017c; 2018).

Given frustration with the produced technologies, many international rules, guidelines and principles (such as ISO 9241 part 210 and ISO 13407) have been refined and tested by the industry to provide guidance to IT professionals and designers on producing usable products. However, little has been reported on the execution of these practices in terms of lessons learnt or the setting up of benchmarks on the learning curve by IT professionals. Even fewer studies on best practices and how to apply them in different contexts have been published. The participation of the researchers in their own research shows a lack of practical experience, and action based on their findings are largely ignored. Participatory action research is employed here to move beyond descriptive studies. Such a study is important as it provides rich and interesting findings on the context of UXD practice as an action activity. Action research is intended not only to understand the problem, but also to provoke change (Hearn &Foth, 2005). Engaging in these practices helps researchers to control the research process and increase their understanding of the studied phenomena. As soon as the researcher begins to collect data and reach a conceptual level of analysis, systematic data inquiries evolve to modify the initial methods of data collection. Studies employing cross-sectional surveys are still scarce in our context. The current status of UXD practice is still unknown with regard to variability in individual, organisational and technological contexts. In order to promote a new and improved process, the existing system's process should be assessed and identified. Therefore, in this study, six different modes in data collection are repetitively conducted including questionnaire surveys, online surveys, netnography, interviews, observation and focus groups. While aimed at obtaining more extensive information, the researchers further aims to move beyond descriptive studies, thereby providing abstract, conceptual understandings of UXD practice phenomena.

This study has identified a number of obstacles and constraints in practising UXD in the Malaysian context, previously not reported in the literature. There is currently a lack of studies addressing the practice of UXD at the individual level in Malaysia. The conduct of this study successfully provided empirical evidence on evaluating individual practice corresponding to UXD, therefore contributing to the HCI literature by providing empirical findings on a developing country's industrial practices in relation to UXD. The researchers' participation in identifying the practitioners' environments and how real work is performed there has shed light on UXD practitioners who wish to accelerate a number of major strategies towards implementing UXD. The study assesses the level of constraints among UXD practitioners to incorporate user experience at any level in the development process. Collaboration within the development team is also essential to effectively incorporate UXD practices. Identifying the developer-designer gap is crucial to reducing communication disputes which might hinder effective UXD practice. Also, a checklist assessment of UXD practices is needed in a low awareness country where user experience has only recently been introduced and has as yet made little impact.

II. METHODOLOGY

The main procedures for this study include identifying those practitioners who consider themselves responsible for user experience (UX) within an organisation or for a particular system or product, regardless of their title (Gulliksen et al., 2004). An online community is chosen as a starting point of the study. This is due to the result of preliminary studies(Idyawati et al, 2019a; 2019b) that show that HCI conference participants and HCI students were not sufficient to become the subject of study. The CoPs were identified through their participation in the online social media community namely Facebook and LinkedIn. The name of the group is identified as 'UX Malaysia' created by one of the Malaysian UX practitioner. 'UX Malaysia' is an official closed group of Facebook created in February 2012. This group have 1,178 members as at February 2015.In the real world, people will not automatically participate in online communities unless they share common interests and intended to interact with each other for a mutual benefit (Andrews, 2002). In fact, not all people are easily drawn to the virtual community unless the people have similar values. Hence, 'UX Malaysia' Facebook group represents a value of interest among the members for UX in Malaysia. The characteristics of a CoP are defined by the stages of CoP development in Table1:

Table. 1 Stages of development of a CoP

Stages of Development	Characteristics	Activities
Potential	People face similar situations	Searching for contacts of similar interests
Coalescing	Members come together to recognise their potential	Exploring connectedness, defining a joint enterprise, negotiating a community
Active	Members engage in developing a practice	Engaging in joint activities, creating artefacts, adapting to changing circumstances, renewing interests, commitments, and relationships
Disperse	Members no longer engage very intensely, but the community is still alive as a force and centre of knowledge	Staying in touch, communicating, holding reunions, calling for advice
Memorable	The community is no longer central, but people still remember it as a significant part of their identity	Telling stories, preserving artifacts, collecting memorabilia

Table 1 identifies the characteristics of a community of practice's development, starting from the first stage until the community disperses. In this case, the researchers conducted a series of active and passive observations among UX Malaysia participants to find out if the characteristics of CoP exist within and between this group of participants. A CoP is not a community of interest, such as people who share particular hobbies. Members of a community of practice are practitioners who develop and share a repertoire of resources such as experience, stories, tools and ways of addressing recurring problems – in short, a shared practice. It takes time and interaction to develop a CoP. In order to investigate the stages of UX CoP development, the researchers chose to perform a participant observation method; characteristics such as what it is about and how it functions are identified in this stage. This method was chosen as a result of the operational definition of CoP, where membership is based on participation and volunteership. In the PAR, a triangulation of netnography, observation, focus group, survey and field study was used. Analysis was done using grounded theory approach. The data was analysed by describing, coding, and thematizing according to grounded theory. Grounded theory is formed by categorising and finding corroborative evidence for each method. The constraints of UXD practices were described based on different methods used to uncover the practitioner's frustrations.

III. RESULTS

Practice Constraints among the UX Community of Practice

During the actual data collection in PAR, the question was twisted from 'what are the problems' to 'what are the frustrations' in practising UXD. The results for the actual study were more genuine and sincere but various in its scale

and degree. According to Grudin and Poltrock (1989), sources of frustration reflect not only performance but high expectations and lack of knowledge perhaps among the people involved in the design and development processes. Surprisingly, the results found that on site interview did not provide comprehensive answers as has been claimed by previous study that suggested that interviews give more freedom to providing detailed responses (Lazar et al., 2010). When the in-situ interviews were conducted, the participants refrained from making negative statements that reflected badly on the organisations where they worked and provided most examples by companies they have worked previously. This can be seen in this study as where the results of organisations constraints are not the same with previous findings during face-to-face interview. This finding is in contrast to that of Bak et al. (2008), who concluded that obstacles relating to organisations were all mentioned in interview, but not in questionnaires. However, there are similarities between this study's interview and observation results with that of Ardito et al. (2013) who suggested that potentially sensitive or controversial topics will be avoided by participants during face-to-face interviews and participants' observation. During the netnography approach, detailed descriptions were offered concerning clients' behaviour and attitudes towards designers, as illustrated in Table 2.

Table. 2 Summary of frustration coding and categories

PAR methods	Coding	Categories
Netnography	1. Unclear goals and purposes 2. Difficult clients 3. Client network influence 4. Lack of knowledge 5. Design lacks usability 6. Confusion between UX and GUI 7. Financial resources	Clients' Knowledge (1, 4) Client's Attitude (2) Clients' Values (3,7) Clients' Decision Making (3) UX Definition (5,6)
Observation	1. Evolving job labels 2. Clients' difficulties 3. Practising UX is almost impossible 4. Developer's mindset	UXD Skill (1) Client's Attitude (2) Motivation (3) Mindset (4)
Focus Group	1. Ambiguous UX definitions 2. Misunderstanding between UI and UX 3. UX is just another buzzword 4. Misunderstanding skillsets for UX professionals	UX Definitions (1, 2, 3) UXD Skill (4)
Survey	1. Knowledge 2. Skills: Communication and others 3. Motivation 4. Awareness 5. Attitude 6. Resources: time and economically 7. Organisation 8. Culture	Direct Control (1, 2, 3) Between Direct Control and Indirect Control (5) Indirect Control (4) Between Indirect Control and No Control (6, 7) No Control (8)
Field Study	1. UXD practitioner's knowledge 2. UX job label 3. Back-end developer and front-end designer 4. Client and management awareness 5. Management knowledge	Knowledge (1, 5) UXD Practitioner's Skill (2) Culture (3) Awareness (4)

Table 2 summarises the coding and categories of frustration felt by participants and respondents from UX Malaysia identified through PAR. By understanding the communication language used, the practitioners may be able to evaluate whether UXD is needed or not in a project. In general, findings during netnography provided more openness among the participants in discussing a broad range of viewpoints and insights into the topic. In the participants' observations session, participants did not answer the question regarding the conundrum that "the boss is always right" directly. The question was raised to reflect the authority influence in the design decision. Here, constraints were more commonly described in the open-ended questionnaire and netnography approach. In the netnography study, clients' attitudes were especially clearly described and explained in detail. It emerged that clients have a strong influence in the practise of UXD. Clients indicate their lack of knowledge of UX when they change their ideas too many times. In fact, the clients' communication language indicated their values of UXD and knowledge on what they want out of a project or design. For example, "Clients know what they want" when they are asked about "flow" and how "information is being displayed" on a screen.

Survey results were categorised based on previous studies which were identified as knowledge (Butler, 1985; Gould et al., 1985; Karat & Dayton, 1995; Rosenbaum et al., 2000; Vukelja et al., 2007), skills (Goransson et al., 1987; Rosenbaum et al., 2000), motivation (Wilson et al., 1997), awareness (Gulliksen et al., 2003), attitude (Gulliksen et al., 1999), resources (Hammond et al., 1983; Gulliksen et al., 1999; Rosenbaum et al., 2000; Gulliksen et al., 2003; Venturi& Troost, 2004).The categories included clients "misunderstood between UX and GUI". The same issues arose during focus group sessions in the participant observation. They explained that "clients are considered difficult" because "they disrespect designers". Nevertheless, "clients are not aware of their needs" when "they know what they don't want but don't know what they want".

Some "clients are too rigid with the design that is similar to

the family's, friend's, brother's and sister's websites". These categories were identified as 'client network influence'. This may lead to "unclear goal and objectives" which is categorised as 'client's knowledge'. Some "clients do not care about the end users at all" and "clients tend to dictate their ideas about the system". This situations are related to 'client's values' and 'client's attitude'. All other findings were identified as categories based on the coding. In order to control bias, subcategories and themes were organised rooted to literature reviews as a benchmark (Ardito et al., 2013). In subcategories, constraints were mainly a result of the knowledge, mindsets and attitudes at various levels including individual, team, project, organisation and business milieu based on behavioural model in the software development (Curties et al., 1988).

Table. 3 Constraints' categories, subcategories and theme

Categories	Subcategories	Theme
Client's Knowledge	Knowledge	Direct Control
UXD Practitioner's Knowledge		
UX Definition		
UXD Skills	Skills: Communication and others	
UXD Practitioner's Motivation	Motivation	
Management's Awareness	Awareness	Between Direct Control and Indirect Control
Client's Awareness		
Client's Attitude	Attitude	Indirect Control
Values		
Financial Resources	Resources: Time and economically	Between indirect Control and no Control
Mindset	Organisation	
Back-end Developer vs. Front-end Designer	Culture	No Control

Table 3 divides constraints theme into five categories, derived by the problems that can be controlled, indirect control and no control (Covey, 1999). The themes were further split up into five sections based on the behavioural model (Curtis et al., 1988) which is closely related to the scenarios in the traditional development process in many organisations in Malaysia.
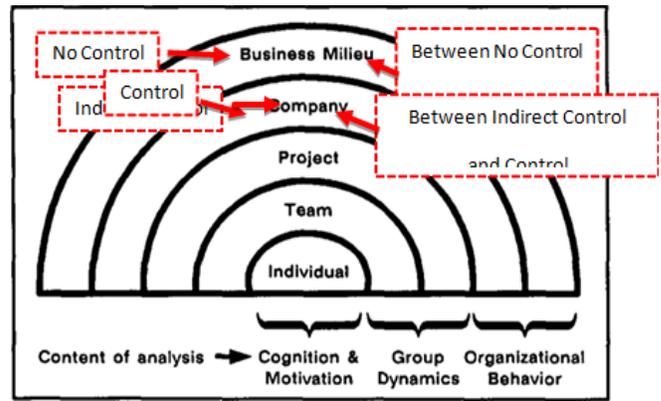
Fig. 1 Thematizing types of problems

Figure 1 describes the concept of thematizing the data based on Covey (1999) and Curtis et al., (1988). The theme will be given a value based on ordinal rank to enable evaluation of behavior. The reason for adapting this model is due to its appropriate circumstances in explaining the real scenarios in the grounded data of the findings. These scenarios were in line with many software development companies with old-fashioned organisational structures (Mayhew, 1999; Bak et al., 2008). Nevertheless, even if the fundamental requirement to put oneself in another person's shoes is fulfilled, the time constraint and direction of roles that the environment sets for the practitioner will continue to be a constraint (Keinonen, 2008). Traditionally, a system or product was created first, and only then was the user involved (Gulliksen et al., 2004). By then, of course, it was too late for the users' views to be included in the system, and they were forced to learn to use it. In many circumstances, iteration was not favoured as most contract documents that pointed out that any changes in the design would incur cost (e.g. maintenance fees). The manipulation of a project development process's terms and conditions to avoid iterations of design had been in practice ever since the system development life cycle was introduced in software development companies.

Figure 2 summarises how different UX roles communicate with the end user and the different levels of decision makers involved in the design decision. The literature suggested that researchers needed to clarify certain aspects of the transcription process in order for them to obtain a thorough reflection (Davidson, 2009). The UX role was normally performed by the front-end designer who valued the end user's goals, expectations and tasks when using the targeted system and/or product; in the field study, the chosen product was any online website: e-commerce, informational, entertainment, community and intranet (Lazar, 2006). In our study, the focus is on problem understanding and description of how these problems affect the introduction of UX in design processes. The UX goal, value and knowledge are transferred by the UX practitioner to the stakeholders and development teams,

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if they were not aware of the importance of UX. This depended on the type of project, whether freelance, government bidding, in-house or private company. The role of UX practitioners varied and are needed to find ways to balance stakeholder business objectives with the end users' needs. The most critical influence on UX incorporation in any project is the decision maker. The highest power in decision making lies with the political and financial control of a project. For example, if the client has the strongest influence over the financial details of a project, then this person has the greatest decision-making power. Similarly, Poltrock and Grudin (1994) found that design decision making has a political component.
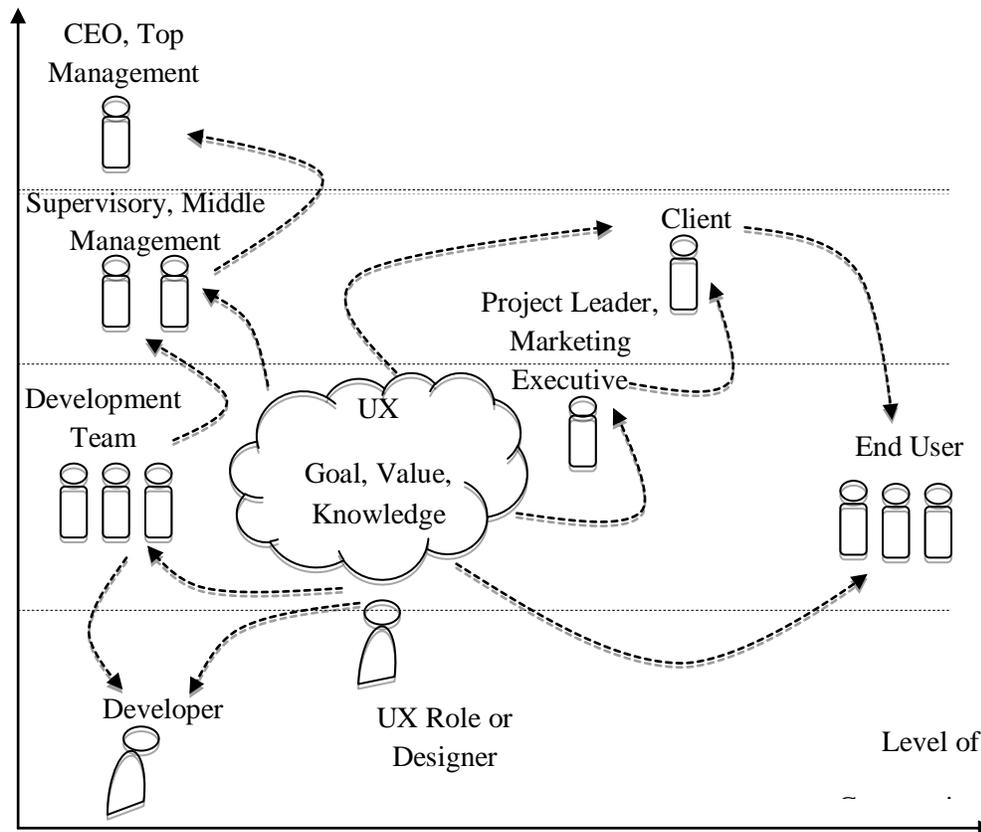

Fig. 2 Current UX practice based on reflection of Phase 1 data

However, for an in-house project, the highest power in decision making belongs to the head of department or top management of the organisation, unless they are willing to pass on the responsibility of decision making to other people. The UX practitioner needs to find this out. Ideally, the UX practitioner ought to get all the information from the end user. Unfortunately, the situation in this context is more complex and could be categorised as a "wicked problem" in design thinking (Dunne & Martin, 2006). In design thinking, the most important characteristic was found to be empathy, which is described as recognising, perceiving and feeling the emotion of another (Wright & McCarthy, 2008). This was sometimes referred to as "walking in another's shoes", a notion that assumes an emotional congruence between people such that one person can identify with the feelings of another because of their shared humanity. Communities of practice (CoP) are groups of people who share concern or passion for something they do and learn how to do it better as they interact regularly

(Wenger, 2006). With the explosion of Digital Enabled Social Networks (DESN), the number of online CoPs has increased, so it is reasonable to look into a new dimension of research methodologies to identify these communities in social networks (Germonprez&Hovorka, 2013).

Netnography provides a spectrum of participation by observing, reading, posting and commenting to gain insight into the attitudes, behaviours and actions of members in the social network (Kozinets, 2013). Monahan et al. (2008) reported that the most effective method in understanding context was observation. Nevertheless, the act of observation possibly leads to bias caused by the researchers' political and social values or personal conflicts and self-interest (Wasserman et al., 2009). To avoid this, participation and participant observation, focus group, survey and field study

through grounded theory was triangulated to complement the netnography approach.

The reason for choosing grounded theory was that the findings in our previous study(Idyawati et al., 2019a; 2019b) had been unable to reach the people who consider the end user to be included in the design and development process. These fundamental values affect the development practice, such as the effort to design usable products or systems (Jokela et al., 2006). With the changing roles and responsibilities of today's IT professionals, it is important to understand the fundamental values in order to determine the kinds of practice they perform (Gould & Lewis, 1985; Hirschheim& Klein, 1989).Contrary to expectations, the right sample of participants was not reached, even after the characteristics of respondents had been restricted to people who attended HCI-focused conferences (Rosenbaum et al., 2002; Vredenburg et al., 2002; Mao et al., 2005; Zhou et al., 2008). UCD principles were not being practised and UXD activities were too low. Findings from the study supported Bygstad et al. (2008), who claimed that difficulty in reaching the right sample was a caveat for all surveys (Idyawati et al., 2019a). The characteristics of a targeted subject for this particular study were those

responsible for representing the users, knowing the user and delivering user data to the design (Clemmensen 2004; Iivari 2006; Putnam & Kolko, 2012).

Evidence suggests that research from IT industrial perspectives in Malaysia largely focused on the software engineering field (Ow, 2005; Majid et al., 2009; Solemon et al., 2010; Asnawi et al., 2010). Recently, Meng et al. (2013) conducted a literature review on the most commonly reported critical issues in the development of IT projects. It included the quality of the infrastructure, community involvement and inability to meet local needs and interests. The inadequate infrastructure may be caused by the lack of contextual study in the IT installation venues. The absence of user-centred studies or a participatory approach when designing IT projects could lead to these problems. The findings reflect on the general lack of UCD and UXD in practice. Majid (2009) and her colleagues investigated user involvement in a traditional systems development life cycle (SDLC). They surveyed 32 software designers' methods used in designing and developing software, and suggested that user awareness issues were the main constraint in practising HCI in the SDLC, with the needs of end users failing to be appreciated.

Table. 4 Checklist of CoP characteristics identified through PAR methods

Community of Practice (CoP)	Methods
The identity defined by a shared domain of interest.	*Netnography* – Sharing of similar problems and concern *Participant Observation* – Language used to describe user experience and design practice
Membership implies a commitment to the UX domain, and shared competencies that distinguished its members from other people.	*Participant Observation* – Mission and vision stated during the event and willingness to spend time to come to the gathering
Members show interest by engaging in joint activities and discussions, help each other, and share information.	*Survey* – Questions regarding the number of times they attended the UX meet-up *Focus Group* – Question and issues raised during the event
Members build relationships that enable them to learn from each other.	*Participant Observation* – To uncover how members were keeping in touch with each other and some of them shared business opportunities
Members of a CoP are practitioners. They develop a shared repertoire of resources: experiences, stories, tools and ways of addressing recurring problems – in short, a shared practice.	*Participant Focus Group* – To identify the shared repertoire of resources in terms of experiences, stories, tools and ways of addressing problems *Survey* – To identify members of practitioners who willing to participate in the next phase of study which is on-site interviews and observation *Field Study* – To uncover process in-practice and development process in a company

Table 4 illustrates the characteristics of a CoP identified, through the PAR approach, showing that several methods needed to be performed to verify that UX users were indeed a CoP. PAR ascertained that the UX Malaysia Facebook group was not merely a network of connections between people: the reason the community came together was to learn about UX. Wenger (2006) commented that a website itself is not a community of practice. The survey questionnaire was distributed to learn the values, motivations and design goals of the respondents. Problems or constraints were also identified from the open-ended questions. This study's survey was conducted to support the observation findings and to identify

respondents who were willing to participate in the next phase of research, the on-site interviews and observations. Netnography was performed to find out if the online community had similar concerns over particular issues, and a shared passion for the domain. One unanticipated finding was that it was important to evaluate clients' characteristics before proceeding to the next level of collaboration. This is to prepare the practitioners to choose appropriate UXD methods and

communicate the design decisions. Observation showed how knowledge and skills are important in identifying the type of UX practices performed.

Participants confirmed that people confused the terms UX and UI. The job titles were found to be evolving but the job responsibilities were perceived only to be slightly upgraded in the amount of knowledge required, while designers were expected to be jacks-of-all-trades. The data collected in on-site interviews during the field study offered participants' stories that have since generated tentative concepts pertaining to the design and development environment. This finding is identical to Schulze's (2003), whose results showed that end users were ignored in one company but looked for assistance after several bad decisions by management in a second. Similarly, the data from the face-to-face focus group discussions and direct observations confirmed the misunderstanding about UX and UI. Comparing the results from the survey, interviews and netnography, was proven to be the most thorough method in identifying the community of practice in an effective manner. Open-ended questions such as "what do you find frustrating when practising UX?" were helpful in revealing issues related to areas that needed focus within the domain.

IV. CONCLUSION

This study employed a participatory action research (PAR) methodology to assess the practice of UXD and to ascertain the practitioners' constraints in Malaysia. The study included the researchers' participation with the practitioners in their community during survey, netnography, observation, focus group and interview activities. PAR allowed the researchers to contribute, either directly or indirectly, towards solving problems during the study. The participatory research itself gauged fundamental issues which pointed to the importance of grounded theory as an analysis approach in HCI. In this research, PAR has contributed by understanding the UXD community practice and uncovering the sources of frustration, and identifying problem areas of UXD practice. In sum, PAR is the most appropriate method to understand UXD practice because of its abilities to uncover silent practices through the netnography, observation and field studies done in this study. The answers to sources of frustration varied according to the method of data collection. In the netnography study, issues were more in-depth and related to clients' attitude, behaviour and knowledge. In the participant observation study, the problems of practice mostly related to the lack of knowledge or awareness of user experience terminology in general. With survey methods, the problems related to the mindsets and knowledge of the people involved in development process. In the field study, lack of management support, skills and awareness among both those involved in the development process and the clients and potential customers came to the fore. Using PAR, the researchers were able to closely understand UXD practice from the community of practice as well their constraints.

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