The Management Model Development of User Experience Design in Organization

A Case Study for Taiwan Technology Industry

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Abstract. This study aimed to develop a holistic user experience management model for companies to evaluate and advance their management status. The research started with qualitative interviewed with corporations in Taiwan, then we used affinity diagrams to organize interview materials, through matching interview findings with Total Quality Management (TQM), Total User Experience Management (TUXM) is constructed to apply in local corporations. To provide corporations with a more effective management tool, TUXM is further paired with Corporation UX Maturity Model to generate tactical UX management guidelines. Our model provides assessment of user experience management from three dimensions:

1. Include all local corporations in our model to obtain a holistic view of the corporation UX development status in Taiwan.
2. For each corporation to examine its UX resource allocation.
3. Combine international advanced UX development cases into the checklist, local corporations can realize the UX development gap when compared with international competitors in the same industry.

Keywords: UX management · User experience design · Activity theory · Corporate User-Experience maturity mode · TUXM

1 Introduction

Companies must embed the concept of user-orientation into their core management strategy, with every department from product design to business planning and marketing motivated to optimize user experience (UX). By emphasizing user interface or

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product appearance, companies can highlight the importance of UX to all levels of management.

In Taiwan, upper-level management and design teams are often divided over the concept of user experience design (UXD). The emergence of UX teams has also changed the original roles and responsibilities of divisions such as marketing and development. Even senior executives who genuinely want to promote UX often have difficulty fully understanding the problems faced by product designers, who in turn struggle to comprehend how design is limited by profit and efficiency requirements.

User experience management is a concept of design managements, which in turn is part of business management. In this discipline, the concept of Total Quality Management (TQM) is considered by many developed nations to be an important indicator of production quality. The term is also used to describe an ideal environment in which every facet of an organization, from staff to strategy to information transfer, is committed to ensuring quality. The objective of this study is to develop an ideal UXD management model, like TQM, that executives can benchmark against when executing strategy.

2 Literature Review

2.1 Tqm

Ishikawa (1986) credits TQM (Total Quality Management) for the development of quality management into a comprehensive system covering all areas beyond product quality. 'Total' means that quality management is intended to encompass as many processes and staff at every level possible. Quality refers to satisfying the requirements and expectations of customers. Management means maintaining the ability of the organization to strive for continuous improvement (Cohen and Brand 1993). In summary, TQM "is a management approach to long term success through customer satisfaction. In a TQM effort, all members of an organization participate in improving processes, products, services, and the cultural in which they work".

According to Westcott (2005), the key principles of TQM are as follows: Customer-focused., total employee involvement, process-centered, integrated system, strategic and systematic approach, continual Improvement, fact-based decision making, and communications.

2.2 From Design to UX Management

Design management is a business discipline that uses management theory and methodology to manage design behavior. In the process of design and production, there are many factors that can lead to design quality issues. Apart from senior executives failing to properly manage product quality, design teams may also have gaps in technology and management techniques. For example, they may not have clear design objectives, specifications, or technology standards. They may lack knowledge and experience in design management, or fail to properly evaluate and deliberate on design.

Quality inspections at each stage of the design process offer the obvious benefit of monitoring and controlling quality; however, they also facilitate discussion and exchange that can enhance design quality. Consistent quality management, from initial design to final production, is essential to ensuring that product design is effectively realized.

When reviewing international case studies on design management, researchers found that many large corporations have utilized UXD management to improve their company value. The strategy adopted by Google is 1. Integrated company design index; 2. Development of localized design; 3. Quantitative HEART framework; 4. Design objective – GSM model; 5. Diverse portfolios for designers, and 6. Quantification of team performance in order to improve management.

Tencent Holdings Ltd takes the approach of 1. Integrating development with design processes; 2. Assessing each department against integration of UX metrics; 3. Setting UX metrics for products; 4. Creating the role of UX General Manager, and 5. Making UX the responsibility of all staff.

In his book *Undercover User Experience Design*, Cennydd Bowles (2011) highlights the four development stages of UX: Undercover UX, Emergent UX, Maturing UX, and Integrated UX.

At the initial stage, companies are focused only on controlling costs, and executives are entirely unfamiliar with the concept of UX. Product functions are driven by marketing demands. During the emergent phase, companies begin to recognize UX principles and engage experts to conduct usability testing on a small budget. Relevant stakeholders also begin to take note of UX, however at this point, UX techniques and knowledge have not yet matured.

At the maturing phase, companies have recognized the importance of UX experts and have begun to establish UX teams and define their job descriptions, goals and responsibilities. Executives are willing to allocate a reasonable budget to UX management, and UX teams have access to various tools and methodologies to achieve business objectives. In the final integration phase, executives have acknowledged the value of UX and believe that it is the responsibility of all employees. Senior management work to integrate UX with corporate development strategy, product development is driven by user requirements, and the entire company progresses towards becoming a customer-centric organization.

Van Tyne (2009) developed the Corporate User-Experience Maturity Model to assist companies in more effectively managing UX. The model progresses through a sequence of stages: (1) Initial stage; (2) Professional Discipline;(3) Managed; (4) Integrated UX, and (5) Customer-Driven Corporation. Aaron (2009) further defined each development phase. Companies can evaluate the maturity of their UX teams by comparing them against the indicators of different development phases (Table 1).

Judging from previous studies, many companies in Taiwan still lack a comprehensive UX management tool. Although the corporate UX maturity model discussed earlier is a management tool for UX-integrated design processes, it does not provide specific evaluation criteria for each development phase. Also, because the model was based on international contexts, we must consider whether it requires modification to suit the industrial environment of Taiwan.

Table 1. Corporate user-experience maturity model

Maturity level	User-centric design processes	Human resources and training	Organizational restructuring	Involvement from management	Company objectives
Initial	1. Basic UX practice 2. Awareness of users 3. Few practice	Limited number of UX staff	External UX experts	Traditional production team	Optimize existing products
Professional Discipline	1. Model design 2. User awareness.	UX team	Project management	1. UX process. 2. Budget allocated	UX leads to tangible benefit
Managed	Design standards	Appointment of UX manager	Delegation of UX duty	Integrated business processes	UX management strategy
Integrated UX	1. Develop different design processes 2. Measurable, controllable, predictable UX outcomes	UX executive's responsibilities are expanded	Involvement from senior management	1. UX Architect. 2. UX management tools	1. UX is at the core of competitiveness 2. UX creates differentiation
Customer-Driven Corporation	1. Design processes are optimized 2. Quantitative UX index is optimized	UX gets into the core business decisions	UX is integrated into criteria for other divisions	1. Commercial strategy includes UX. 2. Third party collaboration	1. UX is integrated into company vision 2. Company evolves into customer-centric organization

Using TQM and the corporate UX maturity model as prototypes, this study built a Total User Experience Management (TUXM) model for industry in Taiwan, incorporating interview data from local companies that have already embedded UX.

3 Methodology

In the qualitative research phase, we filtered subjects by theme and conducted intensive, unstructured interviews that allowed subjects to freely express their personal viewpoints on specific topics. These interviews provided us with high quality data to analyze and interpret (Stokes and Bergin 2006). The advantage of this method is that interviewers can focus on exploring a single topic in-depth (Bainbridge 1989). During March to October 2015, we interviewed 18 subjects from 13 companies.

3.1 Questionnaire Design

According to the design strategy study conducted by Bell Lab in 2011 (Ebenreuter and Geerts 2011), design teams utilize management strategies to solve business problems. They pointed out that design teams generally encounter four major types of event in carrying out their everyday responsibilities:

Table 2. Corporate information (2015)

Company code	Industry type	Occupational level	Companies capital (NT)	Date (2015)
A	Hardware	Manager	8.2 billion	3/29
B	Hardware	Executive, Manager	44.1 billion	4/30
C	Hardware	Executive, Manager	22 billion	4/30
D	Hardware	Manager, Stuff	37 billion	5/04
E	Internet	Manager	The market value of 4.6 trillion	6/15
F	Hardware	Manager	5 billion	7/01
G	On-line service	Executive	700 million	7/20
H	On-line service	Manager	300 million	7/24
I	On-line service	Executive	100 million	9/25
J	Software	Stuff	100 million	8/12
K	Hardware	Stuff	1.1 billion	8/14
L	Internet	Executive	50 million	8/19
M	Hardware	Stuff	31 billion	3/28
Total	13 companies, 18 interviewers			

Decision-making, simplifying problems, exploring solutions, and convergence of differing opinions. We hypothesized that UX teams in Taiwan also encounter these types of event, which we incorporated into our questionnaire development.

Bødker (1995) applied activity theory to the field of Human-Computer Interaction (HCI). This theory provides a set of principles that can be used to analyze and interpret human activity. Activity theorists believe that we develop an object-oriented consciousness of activity from our everyday doings. The activities a person engages in indicate what objects he/she desires to understand and interpret.

An activity comprises the following six key elements: object, subject, community, division of labor, rules, and instruments. The small triangle in the theoretical model represents the links and intermediary effects between elements. This concept can be used to analyze activities in the discipline of UX management.

We drafted the interview questionnaire based on the four types of event described above and the six main elements of activity theory. This draft questionnaire was pre-tested by experts twice and revised four times before finalization.

3.2 Affinity Diagram

Also known as the KJ method, the Affinity Diagram was developed by Kawakita Jirou in 1953. After field interviews, all the participant notes are collated and audio or visual files are converted into transcripts. Keywords, phrases, or sentences relevant to the activity theme are recorded on cards or notes, and then sorted into groups.

Researchers are then able to discuss common ideas or meanings, and identify classes and group relationships. Our Affinity Diagram has three main groups: Company assets, management, and market, as shown in Fig. 1.

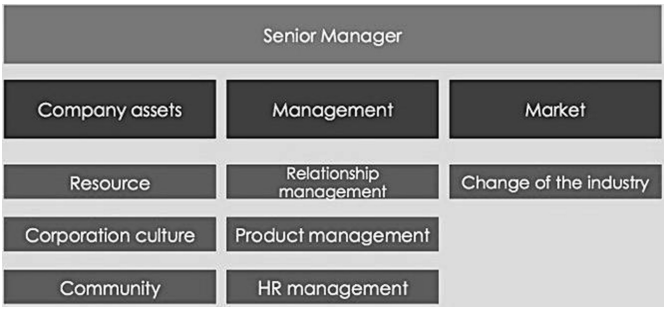

Fig. 1. Affinity Diagram collated from interview data

1. Company Assets: Clouding tangible resources, such as space and budget, as well as intangible resources such as discourse right and company emphasis on UX.
2. Management: The experience and expertise of middle management, including the inter-departmental management of relationships, products, and human resources.
3. Market: The UX manager must continually monitor market and industry trends, and evaluate what threats and opportunities caused by the external environment relates to the UX development.

4 TUXM

We matched the eight key components of TQM with the results of the affinity diagram to create the Total User Experience Management (TUXM) model, comprising the following six elements: UX objectives, Integrated-Design System, strategic communication, Continual Improvement, Fact-Based Decision making, and a T-Type design team (see Fig. 2).

5 Corporate User-Experience Maturity Model

The TUXM model represents the ideal elements of comprehensive UXD, while the Corporate UX Maturity Model provides more specific benchmarks to measure capabilities. We matched the interview results and TUXM elements to the Corporate UX Maturity Model, in order to break UX maturity down into more practical criteria.

Using the method of Aaron (2009), we categorized the companies interviewed into Fig. 3. We then re-classified the companies as shown in Table 2 based on their management methods (Table 3).

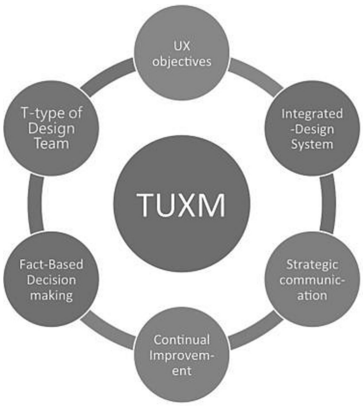

Fig. 2. Six key elements of TUXM

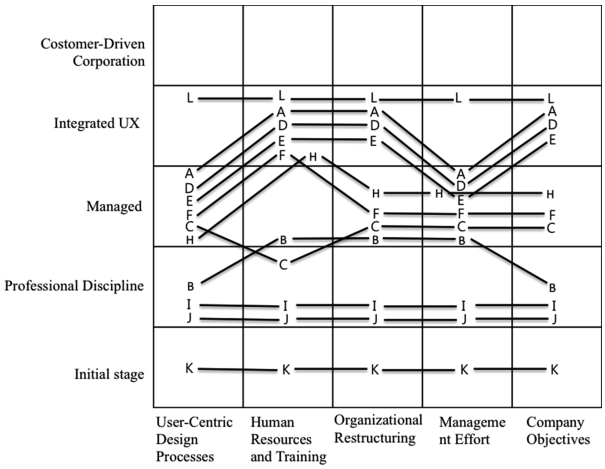

Fig. 3. Distribution of UX maturity among companies interviewed. (The letters A-L represent companies codenamed).

6 Discussion

After incorporating interview data into the revised corporate UX maturity model, we discovered that the model can be used for three purposes:

6.1 Evaluate UX Development in Taiwan

We matched the interviewees to the corporate UX maturity model (Fig. 4), illustrating the extent of UX development in each organization. According to the curve, technology

Table 3. New corporate user-experience maturity model

Maturity level	User-Centric design processes	Human resources and training	Organizational restructuring	Involvement from management	Company objectives
Initial stage	1. Basic UX 2. Limited UX experience	Limited number of UX staff	Out souring.	Traditional production team	Optimize existing products
Solutions	1. Repeatpractice UX 2. Document design 3. Integrate UX into existing processes	1. Externa-l professionals 2. UX training	Delegate responsibility for UX to product manager.	1. Integrate individual UX expertise 2. Visualize UX results 3. Other departments notice UX	Understand the value and benefits of UX
Professional Discipline	1. Model design 2. User awareness 3. Surveys	Other departments are assigned responsibility for UX	1. UX is not integrated with other departments	1. Budget allocated 2. UX satellite products developed	1. UX increase steady benefits 2. Project decision requirements
Solutions	1. User data management 2. Design criteria 3. Process monitoring	1. More resources 2. Designers' responsibilities 3. Project management training 4. Independent UX division	1. Collaboration between designers and project teams	1. UX integrated into business processes 2. Executives take initiative in managing UX 3. Designers develop UX philosophy	Top-down UX promotion
Managed	1. Unified design standards	1. Appointment of UX manager.	1. Delegation of UX tasks and responsibilities	1. UX integrated with business processes	1. UX management strategy
Phased solutions	Quantify UX management criteria	1. UX direct link to executives 2. Cultivate skilled designers 3. UX criteria	1. Cross-divisional design processes 2. Reduce communication costs	1. Executives participate in UX management 2. UX test standards 3. UX Architecture	1. Customize UX 2. Flexible application of UX design
Integrated UX	1. Different design processes 2. UX outcomes are Measurable, controllable, predictable	1. Expand scope and responsibilities of UX executive	1. Involvement from senior management	1.UX Architect. 2. UX management tools	1. UX is at the core of competitiveness 2. UX creates differentiation
Phased solution	1. Optimize design processes 2. Interact with external organizations	UX performance index	Non-UX divisions plan UX management policy	1. UX is integrated into commercial strategy 2. Non-UX departments establish UX evaluation criteria	1. High-level vision and strategy is established for UX
Sustainable development	1. Design processes are optimized 2. Quantitative UX index is optimized	1. UX team provides input into core business decisions 2. UX is prioritized	UX is integrated into criteria for other divisions	1. UX is integrated into commercial strategy 2. Third party collaboration	1. UX is integrated into company vision 2.Customer-centric organization

companies in Taiwan that have integrated UX can be roughly divided into three types. In the upper Fig. 3., companies in the same field have the same level of maturity in UX.

Type 1: Companies in this category are developing evenly across all five management constructs, and are mostly situated in the standardization and predictive control phases. They are less mature in user-centric design and investment from management.

Type 2: Companies in this category are also progressing equally across all five constructs, but are positioned mostly in the foundation and standardization phases.

However, because nearly 80 % of the companies in this table are technological firms, the sample is not representative of the general state of UX development in Taiwan. Once updated with further data on other industries, this table will better represent the general trend of UX development in Taiwan, providing the government with reference in developing UX-related policy. Study the allocation of UX resources in companies.

Companies can use the corporate UX maturity model to (1) self-assess their level of UX maturity, and (2) analyze their competitiveness against industry peers.

6.2 Examine Best Practice

We integrated UX best practice from international firms into this model. Companies in Taiwan can compare their own UX development against these standards, and identify the gap between themselves and their peers overseas.

Although we did identify several generalizable constructs from the data available, we were unable to find a comprehensive case study to compare all management constructs. Nevertheless, we hope that companies can use this model to identify their current phase of development and where they should be investing their efforts in the future.

Two reasons for integrating these international case studies into the model were:

1. The model could be used as an international instrument of design management.
2. Companies wanting to define their position with regards to UX development can compare their results against model companies and identify where improvement is needed.

7 Conclusion

The corporate UX maturity model can be used to illustrate the gap between a company and its competitors with regard to UX development. This visualization of weak areas highlights to other departments the necessity and practicality of corporate UX development, encouraging cross-divisional collaboration.

Although we have identified the key constructs of UX maturity, we do not know whether these constructs should be implemented in some type of optimal sequence, and if so, what this sequence might be. Companies can currently use this model to evaluate

their development status, but the next step would be to order these constructs by priority. Due to time limitations, we were unable to explore this aspect.

We hope that the corporate UX maturity model will be used to provide guidance via three types of mechanism: testing, consulting, and training.

1. Testing: The complete model allows companies to more accurately identify their UX development status.
2. Consulting: A quantitative questionnaire could be developed to conduct a wider survey of UX design teams in Taiwan. The results could then be used to form a specific management plan to supplement the UX maturity model. This would assist companies in executing strategy and engaging suitable consultants).
3. Education and training: The results of this model can be used as the basis for developing UX Strategist training courses or corporate workshops.

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