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# Evaluating Design Effectiveness for Public Sector Services: An Introduction to XE

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**Abstract:** Our research draws on diverse domains: psychology, service management, human factors, ergonomics, universal design and new public governance to develop a scale for citizen experience measurement. We use the byzantine environment of taxation administration to test and further improve our evaluation model. Our model known as Experience Effectiveness (XE), challenges traditional thinking of service quality as a function of client satisfaction or loyalty. XE uses a multi-participant perspective and is defined in humanist terms of usability, service co-production and the successful completion of the service objective. This paper demonstrates that the strategic use of design in public sector administration can be used to improve citizens' lives. Through evaluating the experiences citizens have interacting with the public sector, governments can prioritise issues, reduce bureaucratic complexity and design better services. Improved public administration will ensure more effective use of revenue and higher levels of compliance with the law through seamless, transparent engagement and higher levels of citizen satisfaction. Initial results from the first of two studies are presented to show the practical application of the XE tool. In the taxation environment, we use the process of starting a small business in Australia as a test case. Both the XE measurement model and the associated citizen-client design are evaluated. The results have significance for all areas that require an objective measure of the impact of design on clients. Experience Effectiveness will also provide objective measures for project governance and performance evaluation. The research demonstrates how successful design outcomes can be a pragmatic alternative to enforcement as the principal approach to deterrence as compliance management.

**Keywords:** experience effectiveness, design, evaluation, user-centred, public administration, project management, governance, performance evaluation

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## 1. Introduction

This paper describes research used to evaluate the quality of the client experience for small business interacting with the tax system in Australia. The research is a pilot study for a larger program assessing the creation of a theoretical model for Experience Effectiveness (XE). XE provides metrics to compare and understand the success of government-citizens services. An experience in this context, encompasses a range of activities a citizen may perform for compliance with their obligations such as transacting online, contacting a call centre, making payments, receiving reminders and use of other discrete products such as forms, websites or publications. The various tools, people and processes involved create an experience which is co-produced with the citizen. There are also a number of viewpoints necessary to evaluate the experience including: the citizen (primary actor), staff (secondary actor) and any intermediaries or brokers (tertiary actor). All of these factors contribute to the end product, which in the public sector is compliance with the law. Receiving health care, applying for licences, paying rates or lodging your tax return are all examples of citizen experiences.

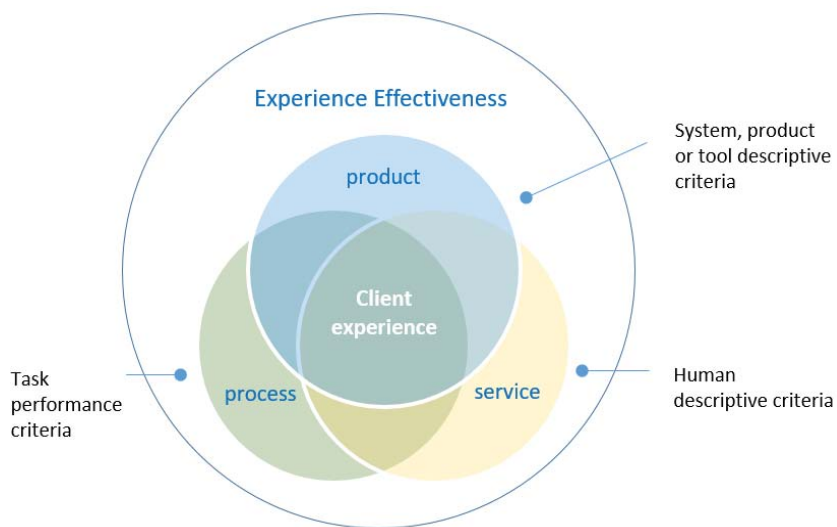
Public sector client experiences are traditionally evaluated using service management approaches based on customer satisfaction or loyalty such as SERVQUAL (Parasuraman et al., 1988) or the Net Promoter Score (Markey et al., 2009). However, the use of such approaches assume that public sector experiences are conducted under the same conditions as services provided by commercial organisations. Most public sector organisations have a monopoly over the services they provide. Therefore, if the experience is poor there are no alternative providers. As a citizen, you have no power as a consumer, control over the interaction or choice for a complaints process. Satisfaction, or similar indicators, are poor proxies for an evaluation of effectiveness with these experiences. Successful compliance has little to do with customer satisfaction or loyalty.

Alternatively, government organisational performance may be assessed on productivity measures such as the collection of revenue. Such limited measures drive efficiency rather than effectiveness (Gomes and Yasin, 2013). Therefore a more sophisticated method for evaluation of effectiveness for public sector services is required.

## 2. The XE model

The XE model evolved through research into taxation compliance using the Theory of Planned Behaviour (Ajzen, 1991). This research showed citizens' intention to comply with their obligations is moderated by the effect of their experience with the public sector system or administration (Langham, 2011). The study demonstrated that individuals who were fully dedicated to compliance would still fail through lack of awareness of rules, mistakes or unforced errors. The administrative system significantly affected the overall compliance outcome of the sample population: small business taxpayers. The results are surprising as a great deal of the compliance literature assumes deterrence, which effects an individual's intention, is essential for citizen compliance (Becker, 1968, Posner, 1985, Von Hirsch, 1987). Instead, it is actually the administrative ecosystem that has the greatest effect on compliance. Therefore, the effectiveness of the administrative design and the subsequent experience created for citizens is a primary consideration for the public sector. Sound performance metrics relating to the design quality of public sector experiences are a necessity.

XE is a synthesis of the measures and principles from a number of relevant domains including: new public management and new governance; service design and management; universal design; information technology; human factors and ergonomics; usability; user-centred design and human reliability assessment. From an extensive review of the literature and subsequent categorisation process (Langham and Paulsen, 2017), three classes emerged as dimensions of XE: people-product (product); people-process (process) and people-service (service). Any combination of the dimensions may exist for an experience, such as process-product, product-service, service-process or service-product-process. The client-citizen experience occurs at the juncture of the two or more of these dimensions. Experience Effectiveness encompasses all elements in the design and is assessed from the perspective of the various actors involved. The multi-viewpoint is novel as a method of evaluation for a client experience. The dimensions to measure XE are shown in Figure 1.



**Figure 1:** Experience effectiveness (XE) model

Each of the dimensions can be evaluated independently or included in the overall assessment. The following outlines the elements within each of the dimensions.

**Table 1:** List of components of each of the dimensions of XE

People-Product	People-Process	People-Service
Cognition Perception Ergonomics Aesthetics Accessibility Usefulness Awareness	Flexibility Error management Efficiency Stability and predictability Security Complexity/simplicity Completeness/seamlessness Context Temporal considerations	Responsiveness (two way) Competence Courtesy Credibility Equity Co-production Interactive expectations Emotion

### **3. Evaluating the AE model**

To validate the dimensions in the model and ensure that the complexity of XE was fully described, we designed a qualitative study using a test case scenario as well as a draft measurement scale for a prototype of an evaluation tool. We used the experience of an individual beginning to trade as a small business as our test case. This experience was chosen due to the complexity of the service ecology, its heterogeneity and criticality of the sample population in the taxation context, as well as the potential high risk of administrative failure.

Tax administration is distinctly different from other public sector areas of responsibility. Revenue authorities are geared to promote compliance either through encouragement or when necessary, enforcement. The currency used to drive compliance is respect, trust and cooperation (Kirchler et al., 2008). Even though taxpayers may want to comply, many struggle to achieve this goal. In Australia, each year many complaints are made to the Tax Office and external scrutineers such as the Inspector-General of Taxation and parliamentary committees. In 2015-16 there were 2148 complaints made by taxpayers to the Inspector General (Inspector General of Taxation, 2016). These complaints relate predominantly to inadvertent non-compliance. Evidence indicates that the tools, education materials and the interfaces to various tax systems are difficult to use, hard to interpret and may actually impede compliance (Hasseldine et al., 2012).

#### **3.1 Population: Small business in Australia**

In 2016, approximately 2.1 million businesses actively trade in Australia. Eighty nine percent of these are small businesses (classified as those with a Total Business Income of less than \$10 million), of which 61% are sole traders. Small businesses are unlikely to contact a professional to assist during the start-up process. Twenty five percent will contact an accountant, 13% will use previous connections in their industry and only 1% will contact the Tax Office (Rutley et al., 2016).

However, small businesses are the backbone of the Australian economy. They employ almost half of the working population (47%) and are essential for innovation (Connolly et al., 2012). This critical part of the economic ecosystem has significant challenges to master if they are to survive. First time business owners need to navigate multiple levels of government regulation, become tax collectors and develop skills in financial and human resource management. Therefore, first time business owners were considered an ideal sample for early evaluation of the model.

### **4. Procedure**

The study must overcome the differences in ontological perspectives of existing research, as well as the practical limitations of certain data collection approaches necessary to establish an objective view of the quality of a client experience. When a citizen-client participates in activities to perform a desired behaviour (e.g., registering a business), the complete service interaction must be viewed from a number of perspectives in order to gain a balanced understanding of the event. A citizen will not necessarily know whether they have correctly complied with their obligations even if they are satisfied with the service. The views of the tax professionals and Tax Office staff are required to complete the evaluation. Each view is in itself a 'truth' of the experience, but not the whole reality. Only through the reconstruction of all the separate elements can a thorough, but incomplete truth be known. Each of these views is a potentially discrete but also a differentially insightful source of information. This simultaneous and multi-viewpoint perspective also performs a cross validation through triangulation (Moran-Ellis et al., 2006). The ontology of the inquiry aligns with post-positivist views of a single reality that cannot be fully known, but only estimated through research and the data (Lincoln et al., 2000). Due to the need for multiple perspectives, the research was conducted from a pluralist view using a pragmatic bricolage (Barker and Pistrang, 2005, Frost, 2011, Todd et al., 2004). Observing both the subjects and the activities in context was necessary to genuinely explore XE.

Consequently, the study followed a sequential exploratory strategy (Creswell, 2009). Ethnographic techniques were used to gather contextual information as well as synthesise material from existing data sources. Interviews with design specialists, subject matter experts and tax professionals were also used to gain insights from the different actor's perspectives. Data from these activities was used to validate knowledge on design principles and performance measures that apply to XE. Thematic coding of the data was conducted and process maps of individual experiences were developed. The first author combined the process maps and the coded data to create a client experience map. Emotions, questions, attitudes, errors and fail points were also identified in the

experience. A pilot measurement tool utilising the draft evaluation scale was also provided to all participants to complete at the end of each session.

Stratified random sampling was used for the participants in this study. Business owners from micro or small and medium enterprises were invited to participate in individual sessions. Tax Officers, tax professionals and design experts were also interviewed to gain an understanding of the obstacles encountered when working with taxpayers. Tax professionals were randomly sampled from those who represent small business taxpayers. Table 2 outlines the different activities and the related samples.

**Table 2:** Samples used for the study

Contextual inquiries and observations	Interviews
4 new small business operators	12 Tax Officers specialising in small business
8 Experienced business operators (>3 years)	5 Tax administrative designers
	Inspector General of Taxation (senior representative)
	4 tax agents for small business operators

Additional qualitative and quantitative data were collected and analysed. This data consisted of complaint reports and existing research into specific administrative design functions. Relevant themes were also coded to create a core set of dimensions to describe XE and to challenge the dimensions identified from the literature review.

The first author evaluated each component of the experience (or sub-experience) using the XE variables for product, process and service (Table 1). Where possible existing measurement scales were used to create ratings. Based on these scores, each variable was given a rating out of 10 (1-low or poor, 10-high or strong) across each of the XE dimensions of product, process and service. Ratings were given to each section based on evidence gathered by the first author. These ratings were compared with information provided through interviews with tax design and subject matter experts. Finally, the results from the participants utilising the pilot measurement tool were compared with the coded qualitative results and the observations of the first author. All of the data was also mapped on a client experience journey map (Figure 2).



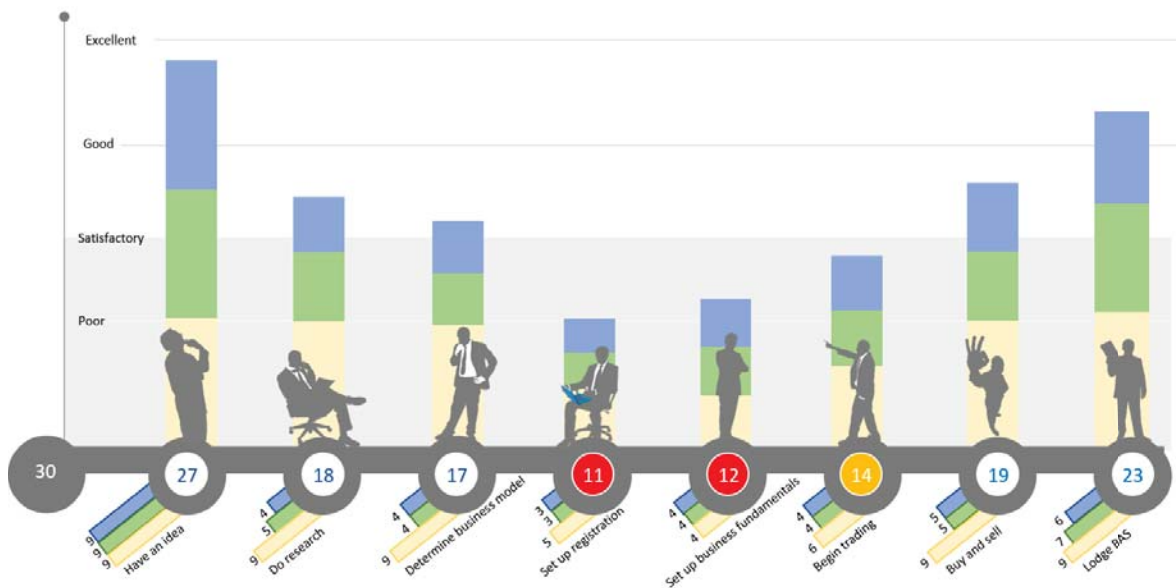
**Figure 2:** Image showing a section of the client experience journey map of the small business experience

### 5. Results

Table 3 and Figure 3 show the comparison of quality ratings for each stage of the starting a small business experience using the XE framework. Eight sub-activities were identified for the process of starting a small business: have an idea; do research; determine business model; set-up registration; set up business fundamentals; begin trading; sell and buy; and lodge business activity statement (BAS).

**Table 3:** Researcher/observer ratings of each aspect of the starting a small business experience (rating out of 10)

	Have an idea	Do research	Determine business	Set up registrations	Set up business	Begin trading	Sell and buy	Lodge BAS	Mean
Product	9	4	4	3	4	4	5	6	4.87
Process	9	5	4	3	4	4	5	7	5.12
Service	9	9	9	5	4	6	9	9	7.5
Total score (out of 30)	27	18	17	11	12	14	19	21	



**Figure 3:** Graph showing initial results from the prototype of the XE measurement tool

The total ratings given by the first author were compared with the early results from the prototype tool for each of the different participant perspectives. These ratings are shown in Table 4. Only basic statistical analysis has been conducted on these results due to the preliminary nature of the research. Therefore, quantitative results should be viewed as early indications of trends rather than as definitive measures.

**Table 4:** Comparison of the ratings across the different start-up experience perspectives

	Product	Process	Service	Mean
Small business	4.5	3.51	6	4.67
Subject matter expert	3.59	3.4	5.9	4.2
Researcher/observer	4.87	5.12	7.5	5.87

The areas rated lowest were *set-up registrations* and *set-up business fundamentals*. Within each of the sub-experiences, products and processes were rated significantly lower than services. The lowest rated process variables were: *lack of short-cuts, flexibility of process, inability to use existing tools, large amount of effort, and the large number of steps to complete the process*. The lowest rated products variables were: *amount of focussed attention required, a heavy reliance on memory and use of specialist jargon*.

A number of weaknesses exist in the touchpoints for the business start-up experience. The lowest rated part of the experience was the registration process for businesses. Businesses were aware of basic requirements but were unaware of industry specific registrations until they were in urgent need of a particular registration or permit. One business owner described the experience as *"walking through the dark and bumping into objects that you didn't know existed"*. Clear issues included lack of connection between government services and a lack of responsibility across levels and parts of government for assistance. The fragmented service created reverse workflows, duplication of information as well as general confusion for small businesses.

All business owners, including those who considered themselves knowledgeable and experienced, struggled through the start-up process. Many expressed frustration at the apparent lack of logic in the process and high degree of specification required by government for tasks with little consequence on safety, risk or good business management. One participant produced a local council regulation document required for a permit and said *"I have measured this and its 2.5cm thick. How am I expected to know all of this?"* Delays for this participant had been caused by a local councillor examining the minutia of his business operations before issuing the paperwork. The XE model and rating system clearly identified these elements and demonstrated the weaknesses in the citizen-client experience.

A number of government facilities are available to assist small businesses in Australia including the business.gov.au website which has a checklist of requirements for new businesses. This facility provides an overview of services. However, the research revealed few businesses searched for *"starting a small business"* information. Online discovery did not form part of their natural thinking process. Instead, accountants and related industry professionals were their predominant source of information. Business owners considered these professionals to be trusted authorities. The public sector recommended site business.gov.au, which had a list of new to business requirements, was unexplored and unseen. This failure in the service design is mainly due to a lack of understanding of the entire client experience as well as underutilisation of natural triggers and client touchpoints. The identification of experience touchpoints and evaluating the success of these interactions are essential in evaluating AE.

Evaluation of the effectiveness of the client experience was markedly improved by the use of the XE model. Data gathered from the different perspectives of user, subject matter expert and observer provided clear understanding of the relative importance of different aspects of the experience to the various actors. Subject matter experts focussed on lack of preparation, poor planning and cash flow issues of small businesses owners. Small business owners described their confusion and could not articulate many of the aspects of the complete process. The researcher or third party observer was able to synthesise this information and pull together the overall picture. An outside perspective provided a critical understanding of the fail points in the process and enabled identification of the best points for remedy. Further, evaluating each aspect of the system as categorised by products, process and services allowed identification of systemic issues such as failures in process between government departments. Moreover, the XE model provided greater sensitivity in identifying issues and dependencies to be addressed in the experience.

### ***Improvements for future research***

The XE model can be refined to address a number of issues encountered during this study. Consideration must be given to the objective complexity of parts, or whole citizen-client experiences. If compared against some of the other parts of a business experience, such as managing complex Fringe Benefits Tax (FBT) obligations, the current test case of business start-up would be judged as simple. A measure of legal complexity should be included to provide additional context to the rating of XE. Clear definition of sub-experiences (tasks and activities) is also critical in improving rating and measurement.

Clear definition of sub-experiences (tasks and activities) in the journey is also critical in improving rating and measurement. Participants found it difficult to differentiate process, products and service aspects, which were

categories of service created in the model for the purpose of measurement. Having a third party observer involved in moderating measurement across the different participants is necessary. A number of areas were also problematic to control and measure such as context, co-production and awareness. The literature review and preliminary data analysis indicated additional measures that could be developed for future studies to capture data in both the prototype tool as well as the observer evaluation process.

## **6. Discussion**

Citizens do not have a clear understanding of the various functions of government and how to navigate these structures, nor should they. Public sector services should be designed to make the most of the way citizens automatically manage their lives. Designs should be created based on an understanding of the experience and the services shaped to integrate into the user's world. Instead, public administration largely requires citizens to think like public servants and respond like public sector organisations. As long as this assumption remains, problems will emerge in the perceived effectiveness of public sector services.

A further challenge for the public sector is to genuinely co-design experiences by putting the citizen first. Government departments struggle to disassociate their services from their organisational structures. Creating holistic, departmentally agnostic experiences is still beyond the current administration. Digital services are leading the way in this regard. However, the focus on digital products reduces the experience to one that assumes the necessity of IT products rather than accommodating preferred channels of citizens.

This research demonstrates that taking an organisational perspective of the client experience, such as tax administration, was also confounding. Although the tax authority has a significant role to play in the start-up of a small business experience, the authority is still only a bit player in the overall performance. The citizen sees the experience through an unadulterated lens, and therefore experiences first hand all of the discord between various levels of bureaucracy. This experience plays out as inconsistent terminology, duplication of process and lack of ability to navigate through government services. Even if the experience through one government service is exemplary, the connection with other related services can dilute and distort the overall experience. This result forces us to question the standard approach to designing public administration led by individual departments. Consideration should be given to service design that is agnostic of agency or government structure. Client experiences should drive the design, not be the outcome of departmental negotiation or a government funding model.

At the same time, the use of tax administration as a case study was illustrative. Although some Tax Office products were well designed, many did not provide a consistent experience across channels and the timing of services were not aligned to the natural rhythms of business. Business owners were also anxious about approaching the Tax Office as they feared drawing attention to themselves. The perception of the Tax Office as a firm enforcer is still pervasive for the general populace. This enduring view undermines the opportunities available to the Tax Office in grooming business for success. All successful small businesses had a long term view of good financial management. They also had mitigation strategies for cash management, were well organised, and had reliable, trusted accountants. These important components could be leveraged to improve the client experiences for all businesses.

Developing holistic seamless experiences that support citizens is necessary. However, the political will to make changes across government is missing. Until a conscious decision is made to evaluate the success of government based on the experiences and the services provided to the community, services will remain fragmented, reliant on departmental outcomes and difficult to consume. Experience Effectiveness as an evaluation model is a sound concept. It provides useful insights across the entire client experience but also gives measures and evidence to evaluate individual components of the experience. The adoption of measurement at the client experience level provides visibility for administrators in assessing the role they play in the broader citizen-client experience and also the impetus for departments to work closely together to hide bureaucratic complexity from the community. The intention of this research is to span this divide. Providing a feasible way of assessing a holistic view of a client experience will equip the community to measure what we as citizens expect from our government – good public services.

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