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# Definition and Measurement of the Adaptive IT Capabilities Construct

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## ABSTRACT

Information technology (IT) can play a key role as a necessary, but not sufficient, source of value. Contemporary research on the strategic role of IT is more and more taking the increasing dynamic and volatile business environment with its increasing intensity of market competition, demand for shortening time to market and pressure of first mover advantage into account. Following this approach, the strategic value of IT can be regarded as an enabler of organizational change. In order to be able to produce value to firms, especially in turbulent environments, IT has not only to adapt itself to a firm's continuously changing competitive environment, IT has furthermore to enable the adaptation of firms core competences. This study investigates IT's ability to enable these adaptations by introducing and validating a concept of adaptive IT capability which measures the extent that IT enables the adaptations of firms core competences. The result of this study is a validated research instrument that can be utilized in future research to investigate its antecedent enabling capabilities (upstream factors) as well its effect on organizations and their performance (downstream factors).

## KEYWORDS:

Adaptive IT capability, IT enabled organizational change, IT Capabilities

## INTRODUCTION

Globalisation coalescing with technological advances, shifts in consumer demand and global economic crisis are making the environment under which most, if not all, firms operate and compete highly turbulent and volatile. In order to respond to such changes, companies need the ability to integrate, build and reconfigure internal and external competences (Helfat et al. 2007; Teece, Pisano & Shuen 1997). These new abilities are referred to as *dynamic capabilities* (Teece and Pisano 1994). Dynamic capabilities reflect the firms' ability to achieve new and innovative sources of competitive advantage given its historical resource and capability trajectories and its market positions (Schreyögg & Kliesch-Eberl 2007; Winter 2003). It refers to firms' ability to integrate, build and reconfigure internal and external competences (Helfat et al. 2007; Teece, Pisano & Shuen 1997). Dynamic capabilities are important in quickly creating and recreating new business processes, products and services and responding to either competitive threats or opportunities (Teece, Pisano & Shuen 1997; Wang & Ahmed 2007).

Information Technology (IT) is the foundation of most business processes, is necessary in defining and delivering an organisations' product, services and market scope, and is often deeply embedded within organizational structures (Ravichandran & Lertwongsatien 2005). The ability of an organisation to adapt its products and services and, therewith, its business processes and organizational structures can depend on the capability of its IT to support these adaptations (Overby, Bharadwaj & Sambamurthy 2006; Zhang 2006). While the role of IT as an enabler of planned organizational changes has been widely acknowledged in both academic and practitioner literature (Piccoli & Ives 2005) there is less clarity on how firms can leverage their IT's capability to deal with dynamic changes. The few literature (Byrd & Turner 2000; Fink & Neumann 2007; Pavlou & El Sawy 2006; Sambamurthy, Bharadwaj & Grover 2003) that address the area, albeit the ambiguities and inconsistencies, hint that organisations that are subject to

unpredicted changes need to have equally dynamic IT capabilities. However, what constitutes as dynamic IT capabilities, and what effect they have on organisations has not been reported in the literature. In particular, there is no literature that has clearly defined the dynamic IT capability construct and developed a valid and reliable instrument to measure this construct. Such lack of knowledge limits the explanatory power of the concept of dynamic IT capabilities and its use to understand IT's potential to enable organizational adaptations to unpredictable changes.

This paper addresses this research gap and adds to the body of knowledge in several ways. Firstly, this paper enhances methods of evaluating IT and organisations ability to deal with change by introducing the multidimensional construct of "adaptive IT capability". Secondly, this paper utilises a clearly defined instrument development process to ensure an adequate pool of items provides content validity for the "adaptive IT capability" construct. This construct is further validated through measurement assessment and can be used in further studies.

The paper is organised as follows. In the next section the theoretical background based on a review of previous research is presented. Then, the development of the "adaptive IT capability" construct is presented and the research methodology explained. This is followed by the discussion of the implications of the model and, finally, conclusions are drawn, limitations of the study are identified and suggestions for future research presented.

## THEORETICAL BACKGROUND

The theoretical background for this study is based on the dynamic capabilities literature (Wang & Ahmed 2007; Teece and Pisano, 1994; Wang and Ahmad, 2007) and IT literature that investigates the attributes of the IT infrastructure and capabilities (Byrd, Lewis & Turner 2004; Byrd & Turner 2001; Tallon 2008) and the use of IT in the formation of firm capabilities to respond to change such as digital options, business process flexibility and agility (Sambamurthy, Bharadwaj & Grover 2003; Tallon 2008).

The formation of firm capabilities is a complex process and is often hard to imitate due to path dependence (a capability develops over time and can only be duplicated if its history can also be duplicated); causal ambiguity (uncertainty surrounding which resources are driving firm performance); time lag (time is needed to determine how a capability is built) and economic reasons (copying a capability entails a significant investment in its underlying resources) (Dierickx, Cool & Barney 1989; Grant 1991; Schreyögg & Kliesch-Eberl 2007). Once built, a capability can be a source of advantage for a short period of time. But as environments change, it may become obsolete. Thus, Teece and Pisano (1994) introduced the concept of 'dynamic capabilities' as 'firms' ability to integrate, build and reconfigure internal and external competences to address rapidly changing environments'. Three components of dynamic capabilities are identified – *adaptive, absorptive and innovative* (Wang & Ahmed 2007). Adaptive capability focuses on organisations' ability to adapt themselves in a timely fashion to environmental change through flexible resource management and alignment of resources and capabilities (Wang & Ahmed 2007). Absorptive capability is concerned with absorbing external knowledge and making it available for internal use. Hence, this category stresses the importance of organizational learning and integration of knowledge to keep up with environmental changes. Innovative capability refers to organisations' innovative potential; hence, it focuses on organisations' ability to develop new products and/or markets (Wang & Ahmed 2007).

In general, we can identify two streams of literature covering the notion of IT's potential to enable organizations' formation of capabilities. Firstly, one stream of literature is addressing IT's flexibility to respond to necessary changes in organisations (IT flexibility). IT refers to both the IT technical infrastructure and human resources (Byrd & Turner 2001; Tallon & Kraemer 2004). IT technical infrastructure covers a pyramid of three layers: *IT and communications technologies* (e.g. physical servers and network devices); *shared services* (e.g. enterprise-wide databases and electronic data interchange (EDI)); and *business applications* that utilise the shared infrastructure (e.g. sales analysis, purchasing) (Broadbent and Weil 1997). The IT human resources on the other hand consist of the IT personnel who ensure the operation of each layers of the technical IT infrastructure (Broadbent and Weil 1997). IT flexibility thus refers to a firm's ability to "easily and readily" develop and diffuse IT applications (Byrd & Turner 2000; Chanopas, Krairit & Khang 2006).

The effects of the IT human resources and technical IT infrastructure on firm performance, and their importance to the flexibility of organisations have been found to be positive (Chung et al. 2005; Fink & Neumann 2007). Both flexible IT personnel and flexible IT technical infrastructures have been identified as enhancing a firm's flexibility and competitive advantage (Byrd & Turner 2001; Fink & Neumann 2007). The combination of IT infrastructure and IT human resources can enable an organisation to unleash the hidden value of complementary resources. Although technical infrastructure and basic IT skills can be considered as commodity- like, a business's ability to integrate the

infrastructure components and build systems that are responsive to its strategic context represents another attribute of how flexible IT resources can support business capabilities. We refer to such an attribute as IT flexibility.

The second stream of literature addresses the utilisation and deployment of IT (flexible or otherwise) as a foundation for organizational core competences. We refer to these attributes as *IT enablement*. As business processes represent core competencies, IT is usually deployed to automate, standardize and integrate business processes (Ravichandran & Lertwongsatien 2005). Thus, as organisations develop their core competencies by changing their business processes, they utilise IT to support these adaptations. This has been identified as a source of strategic value to organisations (Gebauer & Schober 2006; Zhang 2006). Several works have contributed to the understanding on how IT foundations can be leveraged to support organisations to deal with change. Pavlou and Sawy (2006) conducted an empirical study with 180 managers in the new product development environment. They found that coordination competence, absorptive capacity, collective mind and market orientation are enhanced by digital options. Digital options refer to digitised enterprise work processes and knowledge systems which enable a business infrastructure that shapes a company's capacity to launch varied and frequent competitive actions (Sambamurthy, Bharadwaj & Grover 2003). Digital options are exhibited within organisations through digitised process reach, digitised process richness, digitised knowledge reach and digitised knowledge richness. Digitised knowledge reach and range support the sensing of external change, whereas digitised process reach and range can be the foundation for response activities (Overby, Bharadwaj & Sambamurthy 2006).

Research into how IT foundations can support organizational ability to react to environmental change was conceptualised differently by Fink and Neumann (2007). Their concept of IT-enabled organizational agility consists of three constructs: *IT-dependent information agility*, *IT-dependent strategic agility*, and *IT-dependent system agility*. Using SEM techniques Fink and Neumann (2007) were able to assess several alternative models in parallel, and hence further validate their findings. The best fitting and most valid model in their research was the one that revealed the positive effects of IT personnel capabilities on IT infrastructure capabilities as well as the positive impacts of IT infrastructure capabilities on three constructs of IT-dependent organizational agility: IT-dependent information agility, IT-dependent system agility, and IT-dependent strategic agility. This study strengthened the argument that when changes in the business environment occur, enterprises require an ability to adapt their information systems and their utilisation of information resources in accordance with the new information needs (Fink & Neumann 2007).

From the synthesis of the previous works, it can be seen that the literature recognises two aspects of IT capabilities—*IT flexibility* and *IT enablement*— which can strengthen firms' ability to deal with change. While IT flexibility refers to the innate attributes of the IT technical and human infrastructure, IT enablement refers to the deployment of IT to support and build complementarities with organizational competences and/or business processes. Possessing a broad variety of IT capabilities does enable a broader variety of competitive actions. However; in view of the notion of dynamic capabilities discussed earlier, IT capabilities have to adapt themselves to changes in the environment to be able to provide ongoing support for core competences or offer innovative competitive action moves. The next section introduces such an attribute of IT, which we refer as adaptive IT capability.

## METHODOLOGY

In order to define the *Adaptive IT Capability* construct and ensure the accuracy and validity of its measuring instrument, this study follows structured frameworks and procedures outlined in previous research (Churchill 1979; Hair et al. 2006; Straub, Boudreau & Gefan 2004). The first stage involves defining the domain constructs of Adaptive IT Capability. Stage two operationalizes the construct by generating measuring items. In stage three, sample design and data collection issues are covered. Stage four contains data analysis to test the validity and reliability of the developed model and instrument.

### Defining the Adaptive IT Capability Construct

The domain construct of the adaptive IT capability draws from IT flexibility, IT enablement and dynamic capability. Combining the concepts of IT capability (flexibility and enablement) with dynamic capability, we define the concept of Adaptive IT capability as follows:

Adaptive IT capability refers to a firms' ability to maintain flexible IT capabilities and deploy such capabilities quickly and efficiently to enable the building, renewing and reconfiguring of organizational competences such as knowledge sharing, learning, and innovation.

Thus defined adaptive IT capability refers to IT's ability to enable effective and efficient adaptations of firms core competences; it covers several areas. These include the ability of the organizational IT to quickly respond to market and functionally related changes, which can be required due to enabling innovative opportunities and competitive actions in the market. Furthermore, they include the ability of organizational IT to quickly adapt and renew internal organizational processes and structures to react to changes in the competitive environment (e.g. new organizational processes and structures due to restructuring of the organisation). It measures the ability of firms' IT to quickly enable and support organizational changes, something which can be required to adapt to a changing environment.

### Operationalizing the Adaptive IT Capability construct

In order to validate the adaptive IT capability construct, it has to be operationalized through a research instrument. The rigorous development of a reliable and valid research instrument minimises measurement error. Following Wang and Ahmed's (2007) classification, three components of dynamic capability can be identified: adaptive, absorptive and innovative. The adaptive IT capability concept within this study focuses on the ability of IT to support firms' dynamic capability in general, and firms' adaptive capability in particular. IT can support firms' ability to respond to market opportunities and threats (Haeckel 1999). Especially in IT-driven industries, IT's ability to respond to environmental changes can be critical (Sambamurthy, Bharadwaj & Grover 2003).

To identify items to operationalize adaptive IT capability, we focused on the two concepts that underlie the definition of adaptive IT capability. The first is IT's own dynamisms and concepts; IT has to respond quickly to market-, product- and operational- related changes. The second is the ability of IT to quickly build, adapt or renew the internal business processes and structures of a company.

Firstly, following the logic of IT enablement, IT is utilised and employed as a foundation for organizational core competencies. Market, product and operational changes demand changes in firms core competences, therewith, changes in IT's support for these core competences. Hence, the items for the adaptive IT capability construct are in several cases adapted items from constructs that measures the support IT can provide for core competences (Ravichandran & Lertwongsatien 2005; Rivard, Raymond & Verreault 2006). These items have been adjusted to measure the ability of IT to quickly renew and adapt this support. In particular (1) Two items from Rivard et. al (2006) were adjusted to '*Our IT is able to adapt quickly to changes in knowledge sharing in the company*', and '*Our IT is able to adapt quickly to changes in organizational learning*'. (2) Two items from Ravichandran & Lertwongsatien (2005) were adjusted to, '*Our IT is able to adapt quickly to changes in the product development*' and '*Our IT is able to adapt quickly to changes in the crossfunctional integration of our firm*'.

Secondly, building on the definition of adaptive IT capability (see above), a literature research identified four items (see Table 1) which provide a measure for IT's ability to quickly build, adapt or renew the internal business processes and structures of a company. Two items ('*To what extent is IT used to reengineering business processes?*' and '*To what extent is IT used to enhance business process flexibility?*') (Ravichandran & Lertwongsatien 2005) were reworded and compiled into one item. This was done because we believed, that adapting the reengineering of business processes and enhancing the business process flexibility are similar and so a more parsimonious, compiled item ('*Our IT is able to enhance business process flexibility*') was utilised in our research instrument. Furthermore, two items from previous literature were reworded to achieve consistency across the questionnaire and to make the appropriate for a 5 point likert scale; resulting in '*Our IT is able to identify new market segments*' and '*Our IT is able to identify new customer needs*').

Finally, six items were specifically developed through logical reasoning to measure IT's ability to support organizational ability to adapt to change (see Table 1). These are (1) '*Our IT is able to adapt quickly to changes which can become necessary when the firm changes it's products or services*', (2) '*Our IT is able to develop new products and services*' and (3) '*Our IT is able to adapt strategic business process reengineering*', (4) '*Our IT is able to adapt quickly to changes which can become necessary when the firm addresses changes in the market and customer demands*', (5) '*Our IT is able to adapt quickly to changes which can become necessary because of competitors actions*' (6) '*Our IT is able to adapt quickly to changes which can become necessary when the firm redesigns its business processes and organizational structures*' was utilized in the adaptive IT capability construct.

ID	Adjusted item	Source
AIC_1	Our IT is able to adapt quickly to changes in knowledge sharing in the company	Adaptability measure of Rivard et. al (2006)

AIC_2	Our IT is able to adapt quickly to changes in organizational learning	
AIC_3	Our IT is able to adapt quickly to changes which can become necessary when the firm changes it's Products or Services	OWN
AIC_4	Our IT is able to develop new products and services	
AIC_5	Our IT is able to adapt quickly to changes in the product development	Adaptability measure of Ravichandran and Lertwongsatien (2005)
AIC_6	Our IT is able to adapt strategic business process reengineering	OWN
AIC_7	Our IT is able to adapt quickly to changes in the crossfunctional integration of our firm	Ravichandran and Lertwongsatien (2005)
AIC_8	Our IT is able to enhance business process flexibility	Ravichandran and Lertwongsatien (2005)
AIC_10	Our IT is able to identify new market segments	
AIC_11	Our IT is utilised to increase the speed of responding to business opportunities/ threats	
AIC_12	Our IT is able to identify new customer needs	
AIC_13	Our IT is able to adapt quickly to changes which can become necessary when the firm addresses changes in the market and customer demands	OWN
AIC_14	Our IT is able to adapt quickly to changes which can become necessary because of competitors actions	OWN
AIC_15	Our IT is able to adapt quickly to changes which can become necessary when the firm redesigns its business processes and organizational structures	OWN

**Table 1: Generated Items for Adaptive IT Capability**

To further test the research instrument two strategies were used. First a Panel of Expert survey of 40 IT/IS academics which were identified through a literature search were conducted. An online survey was set up and the experts were invited via email to rate the relevance of the pooled items to measure Adaptive IT Capability. 14 academics replied. Inter-rater reliability was assessed through correlation-coefficients and indicated that the experts were in agreement (F value= 6.56, significant p-value of P= 0.01, average agreement level of 4,25 of 5). Based on panel feedback, four items (2, 6, 10, and 12) whose average relevance score is less than 3.71 were deleted. Second, the items were discussed in interviews involving two CIOs. The CIOs confirmed that most of the questions were clearly stated, that they understood them well and suggested wording changes to one item.

#### *Data collection*

Data for the purposes of this paper is extracted from a PhD research project. As part of the project, an online survey was administered to a sample of Australian businesses during November- December 2007. The population of the main survey were Australian CEOs and CIOs. A typical response rate in this kind of survey with senior executives is about 5-10 % (Ballard & Prine 2002; Fink & Neumann 2007). Therefore in order to obtain an adequate response rate, a sample size of 3500 CIOs and CEOs were selected from a database bought from IncNet Australia. After three weeks, a reminder email was sent out, leading to another flow of responses. Two month after the first invitation email was sent out the survey was closed and a total of 250 responses were received. 200 large organisations (more than 200 employees) and 46 medium size organisations (20-200 employees) were represented in the sample. The respondents came from all industry sectors, with manufacturing (20%), trade & transport (15%) and Government and Health (12%) among the biggest industry groups.

Before proceeding with data analysis, the data was examined for missing values following the recommendations in the literature (Hair et al. 2006). A decision was made to delete all items with more than 5% missing data. The threshold of 5% was set after examining the data, revisiting the questions with missing data and referring to proposed thresholds in the literature (Tabachnick & Fidell 2007). This led to the deletion of two items (items 4 and 5). The resulting data was checked for normality, outliers, multicollinearity and non-response Bias. As a result all items were found to be within recommended threshold for normality, outliers and multicollinearity (Hair et al. 2006). Non-response bias was checked with an independent samples t-test between the first and second wave of respondents. Within the 95% confidence interval, no significant difference between the two waves was revealed.

## RESULTS

### Measurement assessment

Recommended instrument validation procedures call for purification of the measure before moving on to assessing construct validity through factor analysis methods (Churchill 1979; Straub, Boudreau & Gefan 2004). Cronbach alpha was used to assess the reliability of the scale. Internal consistency reliability is tested through inter-item correlations. Low correlation between items is an indicator that the items do not represent the same construct, and hence are producing measurement error and unreliability (Churchill 1979). The item-scale for this item was set at 0.4, a threshold comparable to that used in studies in IT (Palvia 1996). Construct validity was assessed through a factor analysis. A varimax rotated exploratory factor analysis (Principal component extraction) was conducted. Table 2 below displays Item-Scales, Cronbach alpha and factor loadings of exploratory factor analysis.

	Items	Item-scale	Cronbach alpha	EFA
AIC_1	Our IT is able to adapt quickly to changes in knowledge sharing in the company	0.73	0.94	0.79
AIC_3	Our IT is able to adapt quickly to changes which can become necessary when the firm changes its Products or Services	0.82		0.87
AIC_7	Our IT is able to adapt quickly to changes in the crossfunctional integration of our firm	0.72		0.79
AIC_9	Our IT is able to enhance strategic business process flexibility	0.79		0.84
AIC_11	Our IT is utilised to increase the speed of responding to business opportunities/ threats	0.76		0.82
AIC_13	Our IT is able to adapt quickly to changes which can become necessary when the firm addresses changes in the market and customer demands	0.82		0.87
AIC_14	Our IT is able to adapt quickly to changes which can become necessary because of competitors actions	0.78		0.84
AIC_15	Our IT is able to adapt quickly to changes which can become necessary when the firm redesigns its business processes and organizational structures	0.81		0.86

**Table 2: Measurement Assessment of the Adaptive IT Capability Construct**

**Measurement Model of the Adaptive IT Capability Construct**

To further assess the measurement model, and calculate convergent and discriminant validity a confirmatory factor analysis was conducted. Confirmatory factor analysis was conducted with AMOS. The adaptive IT capabilities construct was theorised to consist of eight items (AIC 1,3,7,9,11,13,14 and 15). The assessment of the proposed adaptive IT capability measurement model yields an inadmissible model fit (adjusted  $\chi^2 = 6.27$ ,  $p = 0.00$ , CFI=0.92, RMSEA, 0.161, RMR= 0.36) Thus, respecification statistics were calculated and are presented in Table 3 below.

	AIC_1	AIC_14	AIC_3	AIC_7	AIC_9	AIC_11	AIC_13	AIC_15
AIC_1	0,00							
AIC_14	-0,32	0,00						
AIC_3	-0,54	0,34	0,00					
AIC_7	1,11	-0,23	-0,57	0,00				
AIC_9	0,23	-0,15	-0,67	1,99	0,00			
AIC_11	-0,12	0,91	-0,26	-0,74	0,03	0,00		
AIC_13	-0,56	0,08	0,84	-0,61	-0,41	-0,07	0,00	
AIC_15	1,08	-0,82	-0,07	0,09	0,31	0,10	-0,14	0,00

**Table 3: Respecification Statistics**

The respecification statistics in Table 3 above show high standardised residual covariances for a couple of items. This implies that the model does not represent the data correctly. A couple of corrective measures were thus performed (Hair et al. 2006). Firstly, the items AIC\_13 ('Our IT is able to adapt quickly to changes in the market and customer demands') and AIC\_3 ('Our IT is able to adapt quickly to changes in the firm's products or services') both measured



similar things. Changes in market and customer demands would lead to changes in products and services. Hence, the items AIC\_13 and AIC\_3 were covaried. Secondly, the item AIC\_14 ('Our IT is able to adapt quickly to changes which can become necessary because of competitors' actions') showed high residual covariances with AIC\_15 ('Our IT is able to adapt quickly to changes in business processes and organizational structures'). As Item AIC14 had the smallest factor loading, it was deleted. Finally, the items AIC\_1 ('Our IT is able to quickly adapt to changes in knowledge-sharing in the company') and AIC\_9 ('Our IT is able to enhance strategic business process flexibility') indicated a misfit. Hence, they were deleted. The resulting final measurement model for adaptive IT capability is illustrated in Figure 1 below.

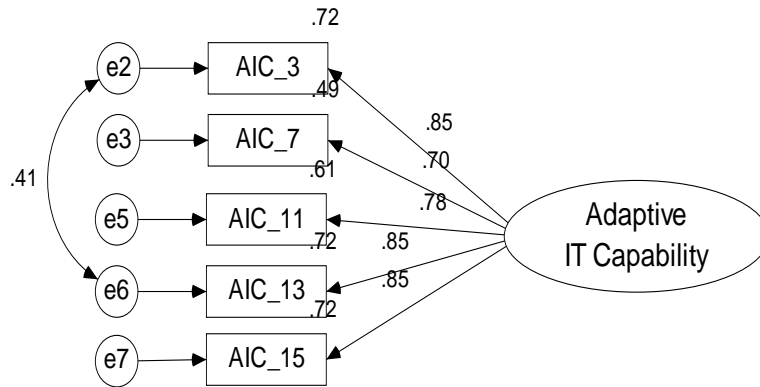


Figure 1: Final One Factor Congeneric Measurement Model for Adaptive IT Capability

Model identification				Model Fit Statistics			
observed variables	=	6		X <sup>2</sup>	=	2.46	CFI = 0,99
estimated parameters	=	11		X <sup>2</sup> / df	=	0.62	RMSEA = 0
df	=	4		p	=	0.65	LO 90 = 0
Model is identified				RMR	=	0.09	PCLOSE = 0.82
Factor loadings							
(*** = p< 0.001, ** = p< 0.01, * = p< 0.05)							
Item	Variable	Estimate	S.E.	C.R.	p	SMC	Comment
AIC_3	<- adaptive IT capability	0.74	0.52	14.18	***	0.72	Convergent validity holds
AIC_7	<- adaptive IT capability	0.61	0.05	14.20	***	0.50	Convergent validity holds
AIC_11	<- adaptive IT capability	0.71	0.05	12.78	***	0.61	Convergent validity holds
AIC_13	<- adaptive IT capability	0.78	0.06	14.26	***	0.72	Convergent validity holds
AIC_15	<- adaptive IT capability	0.77	0.05	14.18	***	0.72	Convergent validity holds
Model Fit acceptable							

Table 3: Statistics for Final One Factor Congeneric Measurement Model of Adaptive IT Capability

The statistics for the final one factor congeneric measurement model displayed in Table 3 above indicate an acceptable model fit and convergent validity (SMC above 0.3 for each item). Hence, this measurement model for the adaptive IT capability construct is accepted.

## DISCUSSION AND CONCLUSION

With increased emphasis on the strategic role of IT's ability to enable organization to cope with change, it is imperative to gain a deeper understanding of the factors that enable IT to do so. Even though, theory construction and cumulative tradition are the goals of a research field, they are still dependent on sound measurement (Bagozzi 1982). Hence, further advancement of inquiry into the field of IT and dynamic capabilities demands a sound measurement of IT's ability to support companies to deal with change. To bring the field of inquiry about IT and dynamic capabilities one step further it is thus essential to move forward and link theoretical concepts to empirical measurement assessments. Hence, the purpose of this study was to develop a validated construct that measures the ability of IT to enable support for adaptation of organisations' core competencies. A rigorous instrument development process was applied to ensure the validity and soundness of the construct. This process included panel of expert surveys, pilot studies, and reliability and construct validity assessments. From the theorised 15 items, only five were included in the final validated construct. The final five items were assessed and their validity attested.

The introduction, definition and validated measurement model of adaptive IT capability in this study extends the findings of Pavlou and El Sawy (2006) as it introduces a higher order IT resource which can measure the extent to which IT enables organizational dynamic capabilities. Furthermore this study enhances works of Ravichandran and Lertwongsatien (2005) by providing a dynamic concept in addition to their static approach of IT support for core competences. Doing so, this study enables to extend Ravichandran and Lertwongsatien (2005) model of static IT capabilities by a construct that measures the ability to renew and adapt these IT capabilities to match new environmental settings.

As with all empirical investigations limitations to the methodology and assessment are present. Two main weaknesses of this paper should be acknowledged. Firstly, the data collected from this study is collected from Australian medium and large sized firms only. Even though, characteristics of IT can be expected to be similar across the world, competitive environments and demographic variables (e.g. average company and IT department size) differ. As technology is socially constructed and technological developments and deployments are context sensitive, data from other environmental context might lead to slightly different outcomes. Secondly, although relevant literature regards the sample size of 250 acceptable for this kind of instrument assessment (Hair et al. 2006) we recognise that other scholars might argue for higher sample sizes in order to obtain more valid results. Resulting out of these limitations the results of this study have to be understood, to some degree, in a specific business environment.

Further research can utilise the validated construct of adaptive IT capability to examine its antecedent factors (upstream factors) as well its impact on competitive advantage of firms (downstream factors). Several antecedent IT capabilities could be scrutinized as possible factors that might enhance IT's ability to enable fast and efficient adaptations of firms' core competencies. These include IT infrastructure capabilities, IT human resource capabilities as well as IT managerial capabilities. Further research could use the validated research construct of this research to investigate the effects of antecedent IT components on adaptive IT capability. Furthermore, the validated construct of adaptive IT capability of this research could be utilised to examine the effects of IT enabled organizational change on business and organizational performance. More precisely, future research could investigate if and how adaptive IT capabilities can be a source of competitiveness for contemporary companies. Doing so, the validated research model of this research could further debunk and spark the debate on IT enabled competitive advantage through enabling dynamic capabilities.

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