



\$VVHVPHQW RI &OLHQW 6DWLVIDFWLRQ RQ)
:RQML +RVSLWDO (WKLRSLD

I &OLQ 'LDJQ RVLV DQG

:DNMLUD %\$ 6HODOH &DPSXV \$GGLV \$EDED 8QLYHUVLW\ (WKLRSLD
&RUUHVSRLQJ DXWKRU :DNMLUD %\$ 6HODOH &DPSXV \$GGLV \$EDED 8QLYHUVLW\ (WKLRSLD
5HFHLYHG)GDWH \$FFHSWHG)GDWH 3XEOLVKHG GDWH)HE
&RSULJKW :DNMLUD %\$ 7KLV LV DQ RSHQ DFFHVV DUWLFOH GLVWULEXWHG XQGHU WKH WHUPV RI WKH
GLVWULEXWLRQ DQG UHSURGXFWRQ LQ DQ\ PHGLXP SURYLGHG WKH RULJLQDO DXWKRU DQG VRXUFH D

\$EVWUDFW

%DFNJURXQG 3DWLHQWV KDYH WKH ULJKW WR H[SHFW TXDOLW\ RI FDUH 3UR
VHUYLFHV LV DQ LPSRUWDQW WDVN IRU FDUH SURYLGHUV VR DV WR LQFUHDVH V
+RVSLWDO EDVHG SDWLHQW VDWLVIDFWLRQ RQ IDPLO\ SODQQLQJ VHUYLFH XWLO
DYDLODELOLW\ DQG TXDOLW\ RI IDPLO\ SODQQLQJ VHUYLFHV DUH EHOLHYHG WR KD
GHFOLQLQJ IHUWLOLW\ UDWHV LQ GHYHORSLQJ FRXQWULHV

2EMHFWLYH 7KH REMHFWLYH RI WKLV VWXG\ LV WR DVVHVV WKH FOLHQW VDWL
SURYLGHG LQ ZRQML KRVSLEDO 2URPLD VDWWH (WKLRSLD

0HWKRG &RUVV VHFWRQDO VWXG\ GHVLJQ ZLOO EH XVHG GXULQJ WKH VWXG\
\$OO ZRPHQ RI UHSURGXFWLYH DJH JURXS ZKR YLVLW ZRQML KRVSLEDO
SURYLGHUV XULQJ WKH VWXG\ SHULRG ZHUH VRXUFH SRSXODWLRQV \$OO IDPLO
ZHUH DYDLODEOH GXULQJ WKH VWXG\ SHULRG ZHUH WDNHQ DV VDPSOH 7KH VD
VDPSOLQJ PHWKRG 'DWD ZHUH FROOHFWHG E\ IDFH WR IDFH LQVHUYLHZ DQG REV
(QJOLVK YHUVLRQ VHPL VWUXFWXUH TXHVWLRQQDLUH 7KH TXDOLW\ RI GDWD F
FOHDU LQVWUXFWLRQV WR WKH GDWD FROOHFWRUV 7KH UHVXOWV RI WKH VWXG\

5HVXOWWRWDO RI KXQGUHG IHPDOH FRQWUDFHSWLYH XVHUV DQG ILYH VHUYLFH
HLJKW SHUFHQW DUH LOOLWHUDWH ZHUH PDUULHG DUH \HDUV ROG
GRPLQDQW QXPEHUV \UH f\UFOLHQWV NQRZ IDPLO\ (P0@ A 0PHUH W ,QMHWLRQ
"A0@P€5P€6b `p0•P€@€€ p0A XVHp

\$ERXW "A0\`tP€6b(pUFOLHQW(pU DV\`t p\`TP p 2\`TÀ •UPDWLRQ DQG VHUYLFH WRJH
\,pUH f",p`dA€ p`0KDYf",p`00PLQ JHPH("P€6b("VHUYLFH \,pUH f",p`dA€ p,p€A0 "A0@H GQ\W
WHUP IDPLO\ (t ODQQLQJ \$OPRVW "A0\`t@`dA€ p\`@ €P€0QRW (tVDWLVLHG IUP0I
VDWLVIDFWLRQ ILFLHQW
PDULWDO"VWDWXV DQG HGXFDWLRQ ZHUH IU€ p0A 0UWDQW IDFWUP`

&RQFOXVLRQHQW("`@pA`•@`pA 0RQ XWLOLJDWLRQ RÂ("•@ A0A,&SODQQLQJ("`€P•A
LQIRUPHG ZHOORQ VKRUW WHUP FRQWUDFHSWLYHV PHWKRG WKDQ RQ ORQJ WH
KRUPRQDO PHWKRGV LQMHWDEOH DQG RUDO FRQWUDFHSWLYH \$LOO EHLQJ G
LQIRUPDWLRQ ZLWK WKH VHUYLFH DQG QRW LQIRUPLQJ RQ ORQJ WHUP IDPLO\ S
LPSRUWDQW IDFWRUV DIIHFWLQJ FOLHQW VDWLVIDFWLRQ RQ IDPLO\ SODQQLQJ XW
FOLHQW VDWLVIDFWLRQ RQ XWLOLJDWLRQ RI IDPLO\ SODQQLQJ VHUYLFHV

6WXG\ SRSXODWLRQ DOO IHPDOH)3 XVHUV DJH JURXS DQG VHUYLFH
SURLGHUV ZKR ZLOO EH DYDLODEOH GXULQJ GDWD FROOHFWLRQ SHULRG LQ :RQ
+RVSLWDO

6DPSOH VLJH GHWHUPLQDWLRQ

H VDPSOLQJ WHFKQLTXH ZDV FDOFXODWHG EDVHG RQ WKH SURSRUWLRQ RI
IDPLO\ SODQJLQJ FOLM}HG S & LFH JLYHQ ZKLFK LV
ZLWK FRQ}GHYHO &, DQG SURSRUWLRQ VLJH
ZDV WDNHQ Q WKH UHTXHUHG WDSOHG VLJH QrupDO
GLVWULEXWLRQ YDOXH DW &, S SURSRUWLRQ RI SRSXODWLRQ ZLWK
WKH VDPH FKDUFDWHULVWLF RU SURSRUWLRQ RI ZRPHQ DJH DPRQJ)3
FOLM}HG S G PDUJLQ RI HUURU WDNHQ DV

()

,OOLWHUDWH

7RWDO

0DULWDO 6WDWXV LQJOH

0DUULHG

'LYRUFHG

:LGRZHG

RI WKH FOLHQWV VDLG)3 VHUYLFHV SURYLGHUV DUH FRPSHWHQW WR WKHLU O
7DEOH

&OLQW 5HVSQRVH 1XPEHU3HUFHQW

2SHQLQJ KRXU RI)3 VHUYLFH XQLW LV FRQYHQLHQW"

<HV

1R

1R DQVZHU

3URYLGLQJ LQIRUPDWLRQ RQ ORQJ WHUP)3 PHWKRGV

<HV

1R

)HHOLQJ RI &OLHQW DERXW ZDLWLQJ WLPH

1R ZDLW

+DOI KRXU

+DOI KRXU WR RQH KRXU

2QH KRXU

1HZ VWHULOH QHHGOH DQG V\ULQJH XVHG	
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'HSR YLDO VKDNHQ EHIRUH GUDZLQJ	
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,QMHFWRQ VLWH PDVVDJH

&OLHQW VHW WR LQMHFWRQ URRP

3URYLGHU WROG DERXW DQ\ RI WKH IROORZLQJ

+RZ WR XVH PHWKRQ

\$GYDQWDJH

'LVDGYDQWDJH

6LGH HIIHFW

3RVVLELOLW\ RI VZLWFKLQJ

:KHUH WR JR IRU UHVXSSO\

2WKHU KHDOWK LVVXH GLVFXVVHG

HGXFDWLRQDO VWDWXV RI FOLHQWV PLJKW PDNH WKHP XQDEOH WR DVN TXHVWL
DQG OHVV XQGHUVWDQGHUHQWLRQ DERXW

H GRPLQDQW IDPLO\ SODQQLQJ PHWKRG ZDV LQMHFWDEOH DQG
WKH VHFRQG IDPLO\ SODQQLQJ PHWKRG ZDV RUDO FRWUDFHSWLYH SLOOV
H UHVRQ IRU KLJK LQMHWLRQ XVHUV LQ WKLV VWXG\ PLJKW EH
FOLHQWV SUHIHUUHQW IRU LWV ORQJ

5HFRPPHQGDWLRQ

SEDED (WKLRSLDg \$IULFDQ -RXUQDO RI 3U
0HGLFLQH

:RQML +RVSLWDO KHDOWK SURIHVVLQRQDQVWFRYDWR 3LPSURYHXYDQVVIDFWLORQRW
XWLOLJDWLRQ RI IDPLO\ SODQQLQJ VHUYRFDHDP&BXQVHODQLQJ6DQGFDPSSSRJLSDW
KHDOWK HGXFDWLRQ VKRXOG EH JLYHQ WRULYSDFOH KHDOWK) DPLOLWSDQQLQJDXQLW
VKRXOG ZRUN RQ ORQJ MHKRVSRYDQDQVWFRYDWR
FRPPXQLFDWH ZLWRY:RHLGDXISDOWK FRQWUDFHSWLYH 3RSXODWLRQ JURZWK \$PHU
PHWKRG DGHTXDWHO\ 6HUylfH XVHUV KDYH WR EH IDPLOLDU ZLWK ORQJ WHUP
FRQWUDFHSWLYH OLNH ,8' 1RUSODQW \$RVKHFDOH PHWKRGV \$SSURSRVWVHOD
WUDLQLQJ VKRXOG EH JLYHQ IRU ODWHUQDO &KLOG +HDOWK 00+ 0LGZLIHU
QXUVHV DQG KHDOWK SURIHVVLQRQDOV LQFRQOML +RVSLWDO &RQFSDGHG ERG
DQG 5HJLRQDO +HDOWK %XUHDX PXVW KDYHWHWLYHFRYDWR:DOGLWVDO&DWH
UHJXODUO\ :RQML +RVSLWDO 0DUFLH 5XEDUGW 6RFLDO PKDQJH DQG I
,QWUD KHDOWK LQWHUQDWRQRQDO)DPLO\ DQ
0LQLVWU\ RI KHDOWK *XLGHOLQH RI)3 6HU
3RSXODWLRQ WRGD\

\$FNQRZOHGJHPHQW

)LUVV RI DOO ZH ZRXOG OLNH WR H[SUHVV 8RXU GHHSVW JUDWLWXGH HWYR \$GG
SEDED 8QLYHUVLW\ 6HODOH FDPSSXV IRU JRLQDQVWFRYDWRKDLQFLBI SUHSDULQJ
UHVHDFK SDSHUORZHWLWRVZRXOB WKDQ 42R&PDPOLFDWRQ RI DERUWLRQ :+2 *HQH
3URI <LJJDZ .HEHG IRU KLV QHFHVVDU\ JXLGDQFH HOFBXUDJHPHQW
FRQWUXFWLYH FRPPHQWV DQG VXSSRUW IRU WKLY UHVHDFK SDSHU
SUHSDUDWLRQ 2XU JUDWLWXGH DOVR JRHV WR :RQML +RVSLWDO PHGLFDO
GLUHFWRU DQG GHSDUWPHQW RI 00+ IDPLO\ SODQQLQJ QXUVHV IRU WKHLU
QHFHVVDU\ JXLGDQFH /DVW EXW QRW OHDVW ZH ZRXOG OLNH WR WKDQN RXU
VHFUHWDU\ 0UV 7LJLVW 0HWDIHULD

\$XWKRUV &RQWULEXWLRQV

H RQO\ \$XWKRU LV %LJXQHK \$DQR +H GHYHORSHG UHVHDFK & SURSRVDO
VHDFKQLQJ IRU IXQGLQJ GDWD FROOHFWLRQ FRQWUROOLQJ GDWD FROOHFWR
VXSHUYLVLQJ FRPSLOQDQVWFRYDWRKDLQFLBI SUHSDULQJ DQG
GHIHQVH +H KDV DOVR SUHSDUHG UHVHDFK PDQXVFULSW

\$FNQRZOHGJHPHQWV

)LUVV P\ GHHSVW JUDWLWXGH JRHV WR \$GGLV SEDED 8QLYHUVLW\ 6HODOH
FDPSSXV JRLQDQVWFRYDWR WR WKLV UHVHDFK :H DUH YHU\ NLQGO\
JUDWHIXO WR VXSHUYLVRUV GDWD FROOHFWRUV UHVSRRGHQWV DQG DOO RW
LQGLYLGXDOV WR WKHLU FRQWULEXWLRQV

5HIHUFHV

)RUWQH\ -\$.LUDJX . 0DWHUQDO PRUELGLW\ DQG PRUWDOLW\ LQ 6XE
6DKDUDQ \$IULFD)DPLO\ +HDOWK ,QWHUQDWRQRQDO :RUNLQJ SDSHUV
&HQWUDO 6WDWLWVLFDO DXWKRUW\ (WKLRSLD (WKLRSLDQ 'HPRJUDSKLF
+HDOWK 6XUYH\ LQ 'HSWK DQDO\VLV RQ IDPLO\ SODQQLQJ \$GGLV SEDED SS
7VHJD\H *\$ +DMLWR .: .LWLODHW 6% &OLHQW VDWLVIDFWLRQ ZLWK IDPLO\
SODQQLQJ VHUYLFHV DQG DVVRFLDWHG IDFWRUV DPRQJ IDPLO\ SODQQLQJ XVHUV LQ
+RVDQD 7RZQ SXEOLF KHDOWK IDFLOLWLHV VRXWK (WKLRSLD)DFLOLW\ EDVHG FURVV
VHFWRQRQDO VWXG\ ,QW - 1XUV 0LGZLIHU\
7DWHHROGLH 0 2OROR 6 f'HWHUPLQDQWV RI SDWLHQW VDWLVIDFWLRQ
ZLWK RXWSDWLHQW KHDOWK VHUYLFHV DW SXEOLF DQG SULYDWH KRVSLOWDOV LQ \$GGL